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JANUARY 27, 1997 VOLUME 14, NUMBER 4

NetworkWorld

THE NEWSWEEKLY OF ENTERPRISE NETWORK COMPUTING

TELECOM REFORM: ONE YEAR LATER

Ending the telecom stalemate

Carriers, users and the courts need to act to get competition rolling.

By David Rohde
Washington, D.C.

It has been nearly a year since the Telecommunications Act of 1996 became law. So why does hardly anyone have a choice of carriers for local phone service? And why aren't the regional Bell operating companies carrying long-distance calls within their own regions?

Potential new local carriers say the explanation is simple: RBOCs and GTE Corp. are more interested in bottling up local competition in courtrooms than grabbing the long-distance prize.

But users and analysts see it another way. They say most potential local competitors are chicken. Many long-distance carriers are hesitant to commit big dollars to local telephony buildouts — partly out of fear of giving RBOCs the legal ammunition they need to begin in-region long distance. And cable companies have virtually dropped out of the local telephony sweepstakes.

If they are right, there is a lot of work ahead for everybody before telecom reform in local service and other markets becomes more reality than hype. "I don't think we'll see even pockets of meaningful competition until 1998," says David Goodtree, who heads the Telecom Strategy Service at Forrester Research, Inc. in Cambridge, Mass.

So what needs to happen in order to realize the promise of telecom reform?

See Reform, page 64

A CURE FOR LAGGING CARRIER COMPETITION

Telecom doctors prescribe the following steps to get telecom reform off its sickbed:

Local carriers
- Meet regulatory deadlines for interconnection, number portability, etc.

Long-distance carriers
- Invest more heavily in real local facilities.
- Partner with proven local providers, not hesitant cable companies.

Users
- Find facilities-based local competitors; do not count on resale.

FCC
- Lower access fees gradually but according to a specific schedule.
- Avoid big universal service subsidies that would be passed along to end users.

Courts
- Rule one way or the other on the FCC's guidelines – but do it quickly.

Cisco probes voice market

Voice to run over routers, switches and remote access gear.

By Jim Duffy
San Jose, Calif.

If your voice carries, Cisco Systems, Inc. wants to carry your voice.

Over the next 12 months, sources said, the company plans to outfit its routers, switches and remote access gear with products to turn your data internetwork into an integrated voice/data speedway.

By extending voice support across frame relay, ATM, IP and Ethernet, Cisco believes it can offer a higher performance, lower cost voice/data infrastructure than traditional time-division multiplexer suppliers.

Cisco is also assessing its chances of breaking into — of all places — the PBX market, which has long been the domain of vendors such as Northern Telecom, Inc. and Lucent Technologies, Inc. Internally, Cisco has assembled a voice marketing team charged with rationalizing the company's entry into this arena, and identifying obstacles and adversaries.

"The PBX market itself is several billion dollars a year just in

See Cisco, page 65

NT shops stew over migration plan

By Christine Burns
Redmond, Wash.

Instead of an elevator ride from NT 3.51 to the upcoming 5.0, Microsoft Corp. wants server customers to take the stairs — pushing them to first climb up to NT 4.0, and then step up once again to 5.0 when it arrives later this year or early next year.

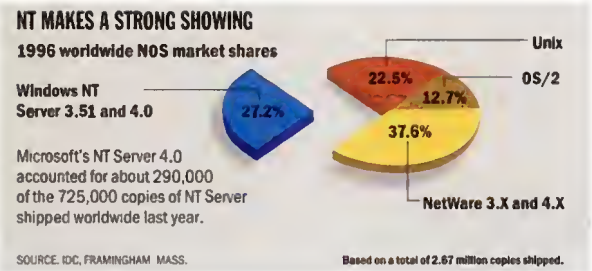
An estimated 70% to 80% of NT Server users are still on 3.51, and many are wary of 4.0 due to stability problems. But Microsoft has not budged.

"We are not thinking about 3.51. We are not sitting here testing 3.51 and 5.0 systems mixed," said Jim Allchin, senior vice president of Microsoft's Desktop and Business Systems Division.

"So users should buy and install NT 4.0 because we are spending a great deal of time making that migration [to NT 5.0] easy," he said.

Users are not pleased and

See Migration, page 13



ISOC takes shot at governing the Internet

By Charles Bruno

Fearing the old adage that those who are unable to govern themselves will be governed by others, the Internet Society (ISOC) next month is expected to launch an initiative to bring together users, service providers, standards organizations and government bodies to set policies for the 'Net worldwide.

See ISOC, page 65

Cisco rivals make IP switching bid

By Tim Greene, Michael Cooney and Jim Duffy

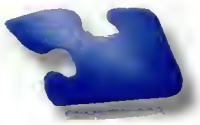
3Com Corp., Cascade Communications Corp. and IBM tomorrow will announce a joint IP switching plan for tying together LANs via wide-area frame relay and ATM networks without using routers.

The switched architecture is designed to reduce router congestion that clogs Internet access and to guarantee that delay-sensitive applications such as IP voice get the priority they need to maintain quality.

It would also improve intranet support for applications such as videoconferencing and whiteboarding that routers do not handle well.

Under the plan, a modified version of IP switching pioneer Ipsilon Networks, Inc.'s IPsilon Flow Management Protocol

See Rivals, page 12



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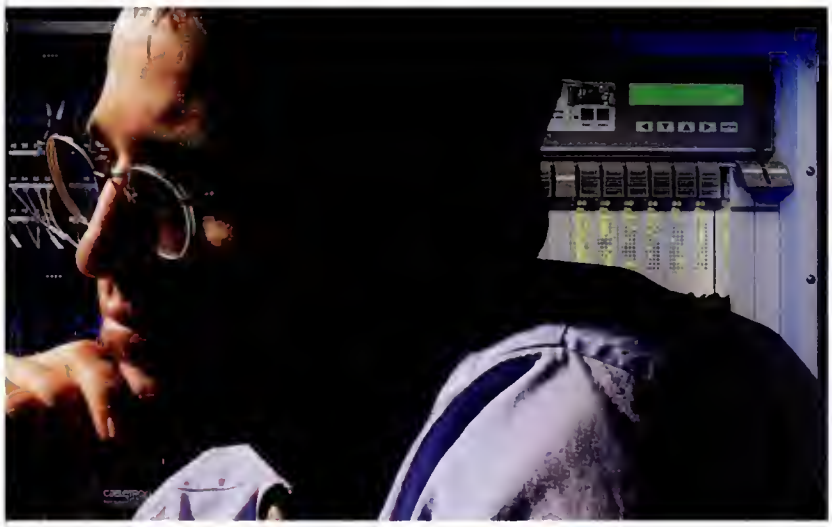

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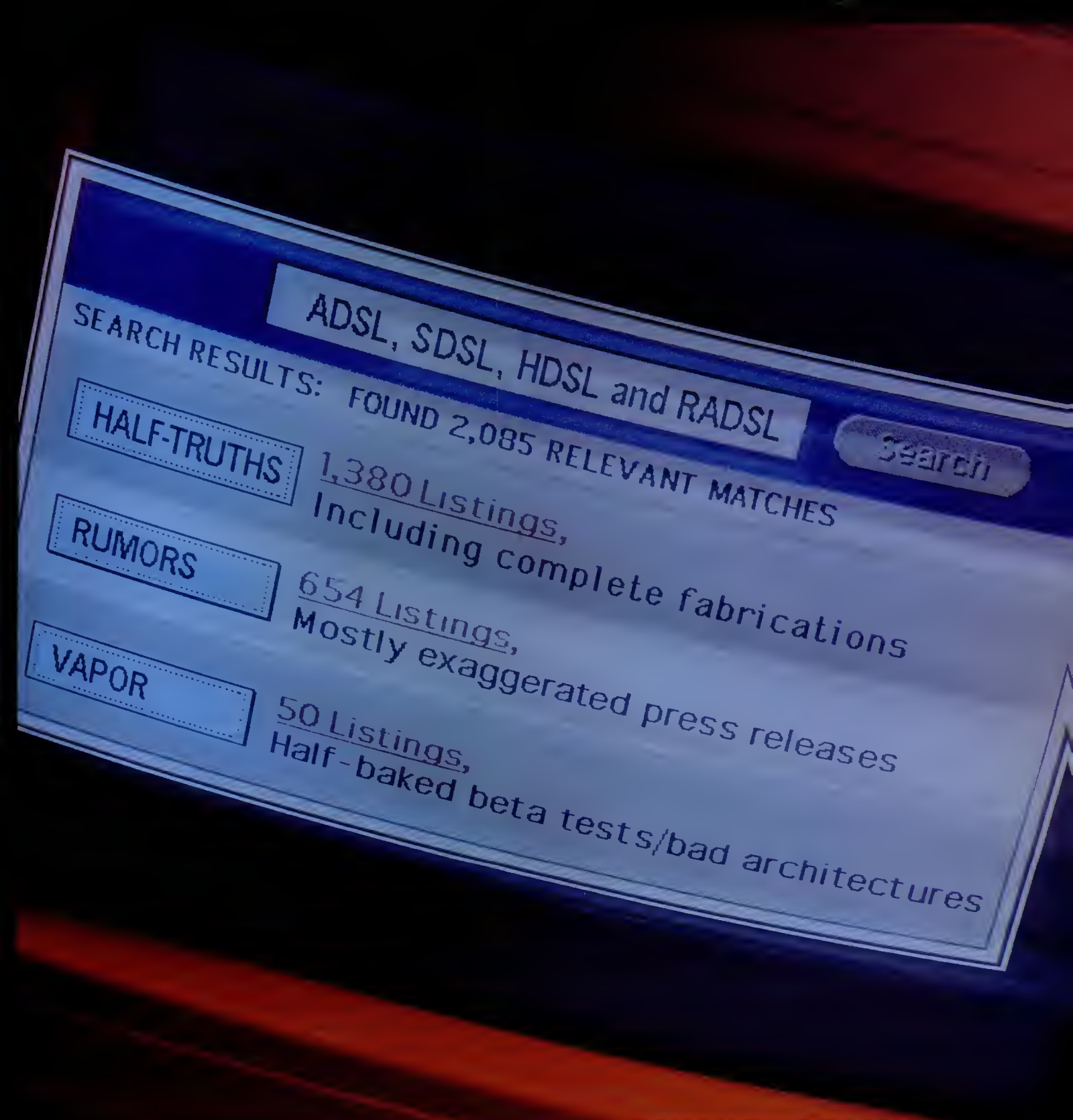

INTEL BRANCHES OUT

The chip king is making a name for itself in the network equipment market. Page 25.

PUT A SOCK IN IT!

The SOCKS specification offers an interesting alternative to today's firewalls. Page 36.

VIDEO AIMED AT INTRANETS

First Virtual's Ralph Ungermann unveils line of video tools. Page 8.

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'Net Buzz: Read about the year's first Internet IPO filing. Page 66.

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Special Section: Security. *Keeping your enterprise net secure is as much a management challenge as a technical one. Find out how to meet it head-on with this steely collection of current security trends, models and practical advice.* ***Coverage begins on page 42.***

Review: NetVision's Synchronicity for NT may be the ticket needed to admit NT users into Novell's NDS. **Page 51.**

ROB ZAMMUTO©

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This Week

Only on Fusion

- A consortium of Internet service providers and high-tech vendors last week said there is no proof that Internet usage is beginning to degrade local telephone service. It also claimed that 'Net surfers actually mean more revenue for the telcos. Download the report. **DocFinder: 0424**
- Microsoft and Spyglass last week ended a tiff over browser royalties and agreed to work on new Web devices. **DocFinder: 0425**

News+

- **Internet.** Grab the Internet International Ad Hoc Committee's report on expanding the pool of top-level domain names, then read a feminist critique of both the committee and its parent, the Internet Society. **DocFinder: 0423**
- **Telecom reform.** Browse copies of FCC orders and reports related to local loop competition. **DocFinder: 0421**
- **Switched Ethernet.** With per-port pricing dropping, now might be the time to look at Ethernet switches on the LAN. Download a primer on the topic. **DocFinder: 0422**

NetRef

- **Security.** Read our special report on securing the enterprise net (page 42), then come online for a firewall buyer's guide and a Web security checklist. **DocFinder: 0420**
- **Directory Services.** Check out papers about directory services from Novell and Microsoft. **DocFinder: 0402**

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News briefs, January 27, 1997

Novell back on electronic commerce track

Contrary to industry speculation that support within Novell, Inc. for electronic commerce was waning because of missed delivery dates, company officials last week decided to forge ahead with plans for IntranetWare electronic commerce add-ons (*NW*, Jan. 13, page 1). Stewart Nelson, general manager for Novell's Application Division, said users will see beta code for NetWare Loadable Module-based products based on Open Market, Inc.'s OM-SecureLink transactional technology this quarter. Additionally, Novell in the coming weeks will announce another electronic commerce-related partnership.

Chatting up Netscape

Under an agreement announced last week, ichat, Inc. will integrate its client and server software with Netscape Communications Corp.'s Communicator groupware client and SuiteSpot server line to allow for real-time chat sessions over the Internet. Netscape, for its part of the deal, will recommend ichat's products to its customers.

Also last week, Netscape announced that it had landed KPMG Peat Marwick L.L.P. as a customer for its Communicator client and SuiteSpot server line.

Beyond Domino

Lotus Development Corp. last week announced tools for integrating its Domino server technology with database, transaction and enterprise application systems. Set for availability in the second quarter, Domino.Connect will provide access from Notes clients and Web browsers to SAP AG's R/3 applications; CICS, Tuxedo and Tandem Computers, Inc. transaction processing systems; and assorted relational databases.

3Com to improve access

3Com Corp. is expected to announce next month at the ComNet '97 trade show in Washington, D.C. enhancements to its AccessBuilder 4000, 5000, and 8000 enterprise and carrier-class access devices. The company plans to unveil support for Point-to-Point Tunneling Protocol, integration of ISDN Primary Rate Interface technology and added security and management capabilities.

UUNET goes upscale

In an effort to keep up with bandwidth demands, WorldCom, Inc. subsidiary UUNET Technologies is expected to announce it is expanding its domestic network to support an OC-12 backbone. Today, UUNET supports a DS-3 backbone based on Cascade Communications Corp. 9000 switches and Cisco Systems, Inc. 7000 routers.

No need to panic

Predictions of a U.S. telephone network meltdown due to Internet traffic have been greatly exaggerated, according to a new study sponsored by a computer and data communications industry group. The study, conducted by Economics and Technology, Inc. for the Internet Access Coalition, claims that the U.S. public switched telephone network can handle the growing amount of Internet and other data traffic in the short term. Long term, however, the circuit-switched network will need to be improved with "data-friendly" equipment to handle increased Internet and online service traffic, the study says.

TNG touches down

Computer Associates International, Inc. (CA) this week is hosting a big press bash in New York where it's expected to announce shipment of Unicenter/TNG. Unveiled almost two years ago, Unicenter/TNG is CA's next-generation network and systems management software suite that features, among other capabilities, a snazzy 3-D virtual reality user interface.

Kodak to snap up Wang imaging unit?

Announcement from photography company could come as early as this week.

By Paul McNamara

While the development has been anything but Instamatic, photography giant Eastman Kodak Co. appears ready to stamp its world-renowned imprint on the growing electronic imaging market by purchasing a chunk of Wang Laboratories, Inc.

Sources said the deal to buy Wang's imaging software unit may be completed any day now, almost four months after the companies first confirmed their mutual interest.

"Most of the people that I've talked to kind of think of it as a done deal," said Tom Brown, a senior analyst at Prudential Securities, Inc. in New York. Brown has heard "[Wang and Kodak] hope to announce something by the time Wang reports earnings [this] week."

Neither Wang, headquartered in Billerica, Mass., nor Rochester, N.Y.-based Kodak, would comment on the state of their negotiations.

Industry watchers, however, are predicting a quick consummation of a deal that will reportedly cost Kodak about $200 million.

As ever more businesses look to digitize paper documents, the acquisition would strengthen Kodak's stance in an electronic imaging market currently dominated by companies such as IBM and FileNet Corp.

Dependent primarily on old-fashioned microfilm products, Kodak is currently a reseller of Wang's electronic imaging software but lacks such advanced technology of its own.

Wang's imaging unit garnered $50 million in sales last fiscal year and continues to grow. However, the company needs cash to bolster its outsourcing and service business as it navigates a now 3-year-old recovery from bankruptcy, experts said.

KODAK'S BITE GETTING BIGGER

If Kodak buys Wang's imaging software business, Kodak will control about 20% of the $2.5 billion to $3 billion market, according to International Data Corp. in Framingham, Mass. Currently, Kodak claims 16% to 18% of the market, while Wang claims 4.5%.

When Wang and Kodak first acknowledged their talks back in October, many industry watchers expected the deal would take merely weeks to finalize.

However, sources said that timetable was disrupted by knotty tax implications, worries about an exodus of brainpower from Wang and concern over preserving Wang's deal with Microsoft Corp. to include its image viewer in Windows 95.

Those difficulties were overcome, said one source, in large part by an agreement that Wang will remain an independent business unit. ■

An Ethernet switch for half price

By Jodi Cohen
Mountain View, Calif.

Still hanging on to your hubs?

Well, that might be difficult to justify when start-up AxoNet Technologies, Inc. this week unveils an Ethernet switch priced at $60 per port.

That's about the same price as a managed shared-media hub, and about half the cost of comparable stand-alone switches in this most price-sensitive of markets. Bay Networks, Inc. sells its 2216T Ethernet switch for about $130 per port, while 3Com Corp. comes in a little lower with its SuperStack II Switch 1000 at $120 per port.

AxoNet's *Chowdhry hopes to replace customers' hubs with his company's $60-per-port Ethernet switch.*

"AxoNet is setting new price points with its Ethernet switch," said Esmerelda Silva, an analyst at International Data Corp., a market research firm in Framingham, Mass. "It competes head-on with shared-media solutions and makes the decision to buy a switch over a hub easy."

In fact, the pricing is so attractive there's almost no reason to stick with shared 10M bit/sec Ethernet technology, Silva said.

So what is AxoNet's secret? Well, Pankaj Chowdhry, company president and chief executive officer, did not want to give away too much. But he said that by adopting existing technologies, AxoNet has eliminated the expense of designing custom processors and has significantly reduced its manufacturing costs.

Chowdhry, previously vice president of information technology at Olympian Graphics, Inc. in Oakland, Calif., started AxoNet after becoming frustrated by the high cost of desktop Ethernet switching. "Users were always coming to me saying that the network wasn't fast enough and response time was horrible," he said. "But I could not make a business case for spending the thousands of dollars needed to upgrade to a fully switched network."

So AxoNet was born. Chowdhry — who helped raise more than $1 million from industry insiders — is joined at the company by engineers from top vendors, including Cisco Systems, Inc., 3Com, Hewlett-Packard Co. and IBM.

Still, some industry observers are skeptical. They note that AxoNet does not have the name recognition, reputation or support infrastructure of its larger, more established competitors.

But AxoNet hopes its NC-100 eight-port Ethernet desktop switch — which costs $500 — will be enough to entice customers. The device operates at wire speed and supports as many as 8,000 media access control addresses. Also, each switch port has four management LEDs that indicate transmit, receive, collison and link status.

Future AxoNet products will include a stackable version of the eight-port switch, which will offer a 100M bit/sec uplink as well as an ISDN port for WAN connectivity. The company also will offer stand-alone and stackable versions of a 100M bit/sec switch. All products will be available in the second quarter.

The NC-100, due to ship at the end of the month, will be sold through distributors. AxoNet would not comment on any OEM deals in the works.

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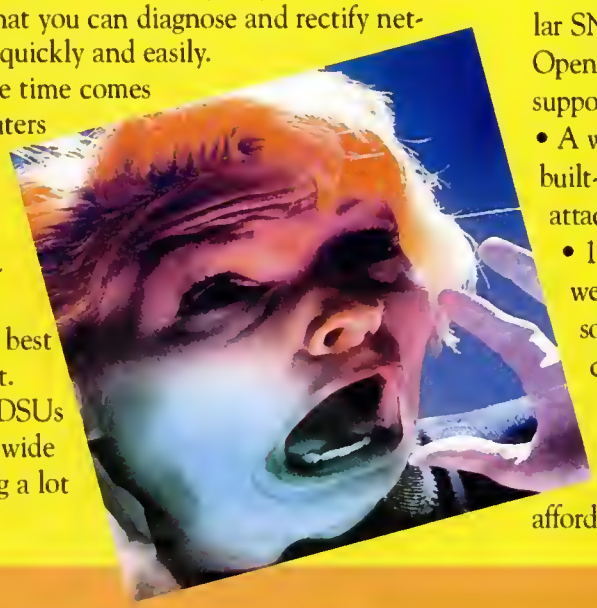

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Switching showdown puts Big Four to test

By Jodi Cohen
Washington, D.C.

Each of the Big Four internetworking players has its strategy to migrate customers from shared to switched nets, but no one vendor has the perfect plan.

That's why *Network World* next week is hosting The Great Switching Debate at ComNet '97 here. The event aims to expose the differences among the seemingly plain-vanilla vendor architectures.

A pair of industry analysts, along with a member of the end-user community, will pepper high-level executives from 3Com Corp., Bay Networks, Inc., Cabletron Systems, Inc. and Cisco Systems, Inc. with technical questions, hoping to clarify their strategies and poke holes in their offerings.

One of the analysts who will be doing the questioning said the panel will push hard to point out the key differentiators.

"When you pick at the scab, all [the vendors' strategies] are going to be very much the same at the high level," said Thomas Nolle, president of CIMI Corp., a Voorhees, N.J., consultancy. "But when we drill down to the next level, you'll see fundamental differences that are going to be important to the user."

For example, Nolle said Cabletron is more committed to switching as an overall net architecture than the other vendors because it has no routing component. "But that means Cabletron has the unique challenge of justifying switching, even in applications where trunk speeds are low and where switch performance isn't much of a factor," he said.

Router king Cisco has the opposite problem. "Cisco has a tendency to make network problems into routing problems when users may believe that they are more reasonable switching problems," Nolle said.

Analysts will also point out any overlap and gaps in the vendors' product lines.

"Cisco offers so many token-ring strategies that it's not clear which one is strategic," said panel member Kevin Tolly, president and chief executive officer of The Tolly Group, a testing and consulting firm in Manasquan, N.J. "And for 3Com, is the 3Com/Chipcom/IBM ATM switch line strategic, or is it the 3Com/NiceCom ATM gear?"

Another issue is whether net managers should eliminate certain technology or just add complementary technology.

"Cabletron's SecureFast Virtual Networking is third-generation technology, implying that first- and second-generation products should be done away with," Tolly said, "whereas Cisco's switching strategy says that switching is third generation and routing is second generation, and a combination of both products are what you need."

Other topics will include how vendors plan to handle quality-of-service applications and provide virtual LAN capabilities. ■

COMPETING SWITCHING SCHEMES

Vendor	Strategy	Description
3Com	Transcend Networking	Relies on the company's hubs, LAN and ATM switches, routers and management gear to let users build switched virtual networks.
Bay	BaySIS	Applies to desktop access, LAN backbones, WAN backbones and remote sites. It defines three areas: transport services, policy services and operation services.
Cabletron	Synthesis	Follows the networking model used by the telephone company, combining ATM, packet switching, enterprise management and connection management services for migrating customers from shared to switched networks.
Cisco	CiscoFusion	Includes a phased integration of switching devices into shared-media networks, incorporating LAN switching within the wiring closet, and ATM switching and routing on the backbone.

THE GREAT SWITCHING DEBATE

Where: Grand Ballroom, Renaissance Hotel in Washington, D.C.

When: Feb. 5, 1:30 to 2:45 p.m.

Moderator: John Gallant, editor in chief of *Network World*

Vendor participants: 3Com's Mick Seaman, Bay's Bill Hawe, Cabletron's Chris Oliver and Cisco's Alan Marcus

Analysts: CIMI's Thomas Nolle and The Tolly Group's Kevin Tolly

User panelist: To be announced

First Virtual gives intranets high-quality video abilities

By Jodi Cohen
Santa Clara, Calif.

First Virtual Corp. last week announced software that enables customers to support high-quality video on corporate intranets.

With First Virtual's integration of its ATM middleware with Netscape Communications Corp. and Microsoft Corp. browsers, customers can conduct real-time interactive video meetings, distribute live video broadcasts, as well as record, replay and store video across a LAN or WAN.

Version 4 of First Virtual's Media Operating Software (MOS) — middleware that lets video applications take advantage of ATM's quality-of-service capabilities — runs on ATM switches, servers and PC clients.

MOS is the key to the company's new suite of client applications. That software includes:

- V-TV, which runs on MOS over Windows and Windows 95, and enables browser users to view live broadcasts.
- V-Caster, an ATM-attached multimedia device that distributes TV signals across intranets by broadcasting MPEG-1 streams over an ATM network.
- V-Synch, which allows two users to synchronize the playback of a multimedia file from two different locations.
- And V-Record, which simultaneously records both ends of a real-time videoconference and then stores it directly to a First Virtual V-Cache video-on-demand storage device.

All of these networking applications can be launched within the Netscape Navigator or Microsoft Internet Explorer browsers.

As far as the quality of video being delivered, First Virtual's video streams run at 30 frame/sec and require 384K bit/sec of bandwidth.

"Business-quality video over the intranet gives customers the ability to collaborate on projects without time-consuming and expensive travel, " said Ralph Ungermann, president and chief executive officer of First Virtual.

One analyst agreed that videoconferencing is a good corporate tool.

"There's just so much that's occurring in business that's driving the adoption of video-conferencing," according to Jeannine Linehan, project manager at Sage Research, Inc., a Natick, Mass.-based market research firm. "For example, it's quite acceptable now to use videoconferencing to make a sales presentation."

Upgrade fees for MOS 4 range from $250 for a one-user license to $12,000 for a 100-user license. Netscape Navigator V-TV and V-Synch support is available now and Microsoft Internet Explorer and V-Record support will be available by the end of the first quarter.

✆First Virtual: (800) 351-8539.

Microsoft unveils Java foundation

By Carol Silwa
Redmond, Wash.

Continuing its rollout of Java offerings, Microsoft Corp. last week announced Application Foundation Classes (AFC) intended to ease Java development.

These so-called building blocks are for creating more sophisticated user interfaces, graphics and multimedia applications.

Of particular note, Microsoft said its AFCs — prewritten packets of code that developers can drop into an application rather than build the code from scratch — would work cross-platform on any standard Java Virtual Machine and serve as a compatible supserset of Sun Microsystems, Inc.'s Abstract Windowing Toolkit (AWT), tools for creating graphical user interfaces.

"What that means to developers," said Don DePalma, a senior analyst with Cambridge, Mass.-based Forrester Research, Inc., "is there's no need to pick and choose between AWT and AFC."

But they will, he said, have to make a choice about Netscape Communications Corp.'s similarly positioned Internet Foundation Classes (IFC), which shipped in December.

One software engineer familiar with both, Ken Rawlings of Scopus Technology, said Microsoft's AFCs provide new features. "I'm sure IFC is going to get there, but some of the stuff Microsoft is showing is pretty impressive," Rawlings said.

As for Sun's original AWT, it has been roundly criticized during the past year for its lackluster graphics. The new overhauled AWT, in beta now, is due out sometime in the first quarter.

Sun's reaction to the Microsoft announcement? "We're happy to see them building class libraries in Java, and we look forward to seeing the code and putting it through the 100% Pure test," said spokeswoman Lisa Poulson, referring to the hyped Java initiative being endorsed by more than 100 vendors.

Products carrying the 100% Pure Java stamp are supposed to run on all platforms. But the certification testing program has not been finalized yet.

Microsoft program manager Charles Fitzgerald said the company cannot commit to 100% Pure Java when it does not know what it is yet. And the AFCs are not due out until later this quarter, when Microsoft's Internet Explorer 4.0 Web browser will be out in beta. ■

10 Mbps to the desktop sounds great.

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SMC TigerStack 100 Fast Ethernet stackable hubs.

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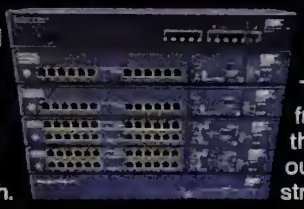

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Network computers introduce uncertainty and cost savings

By John Cox

Deploying large numbers of so-called network computers (NC) instead of Windows PCs could have unforeseen effects on corporate networks. But then again, it may not.

And that's the point: Nobody knows.

"Right now, NCs are uncharted territory," said Gordon Bass, director of systems engineering at AARP Pharmacy Services, the mail order pharmacy for Retired Persons Services, Inc. in Alexandria, Va.

Given the uncertainties, MIS groups need to fine-tune, or even create, a framework that will track NC deployment and the impact NCs have on network traffic and application response time.

"We're convinced NCs will move the bottlenecks from one place to others in the network," Bass said. "So we're monitoring our network bandwidth and utilization to measure our capacity needs and to add capacity as needed."

These uncertainties are unlikely to kill off corporate enthusiasm in the savings promised by NCs, as confirmed in a Gartner Group, Inc. cost-of-ownership study released last week (see graphic). However, they may temper that enthusiasm somewhat.

Dave Cappuccio, a Gartner Group vice president and co-author of the 7-month-long study, said NCs shift costs for [technical] support from the end user to the network, which now is a production system. "Tech support and servers had to be beefed up to ensure the network is highly available," he said.

Others insist the network is already a production system. IBM's Rochester, Minn., LAN supports about 5,000 or 6,000 software developers, said Bruce Anthony, chief architect and strategist for IBM's Network Station device, now in limited release.

"When that puppy is down, we don't do any work," he said. "I don't think that adding some additional network dependencies with NCs significantly changes the reliability or availability equation."

"If the customer has a network problem, he has a network problem without our NC devices," said Doug Klein, chief technology officer for Network Computer Devices, Inc.,a Mountain View, Calif.-based NC vendor.

Klein has seen two problems customers encounter. One is caused by running backbone traffic over the same wire as the NC traffic.

Another problem is centralizing all the servers in one site without enough bandwidth for access. The solution to both, he said, is to group servers by department or workgroup at multiple sites.

Klein admitted, however, it is not clear how moving Java applications over the network — the goal of the Java-oriented NC devices — will affect the picture.

Yet IBM, Oracle Corp. subsidiary Network Computing, Inc. and Sun Microsystems, Inc. are all now completing work on server-based software that is essential for controlling the NC environment, including managing the end user's desktop configuration — application access, downloadable software, and file and E-mail management.■

A CRASH COURSE IN NETWORK COMPUTER COSTS

A Gartner Group study found that all three emerging network computer (NC) models can save users money compared to deploying standard Windows 95 PCs. Network capital, technical support, administration and end-user costs account for about half the cost of running NCs, according to the study.

Desktop computer model	Annual life cycle cost	Cost savings compared to Windows 95
Standard Windows 95 PC	**$9,784**	—
NC client (Oracle model, downloadable Java applets)	$6,010	39%
NC server (Citrix model, Windows apps server)	$6,775	31%
NetPC/NT Server 5.0 (Microsoft/Intel model, zero administration PC)	$7,267	26%

DSL TRAIN STARTS TO ROLL

US WEST is the first major carrier to roll out Digital Subscriber Line (DSL) services.

Speeds: 128K bit/sec without a voice channel or 704K bit/sec with a voice channel

Price: $75 to $175 (estimate)

Technology: ISDN DSL from Ascend and High-bit-rate DSL from PairGain

Availability: By midyear in Seattle; Denver; Minneapolis and Rochester, Minn.; Phoenix and Tucson, Ariz.; Salt Lake City; Portland, Ore.; Albuquerque, N.M.; Spokane, Wash.; Omaha, Neb.; Des Moines and Cedar Rapids, Iowa; and Boise, Idaho

US WEST rolls out DSL

Top speed for offerings is currently 704K bit/sec.

By Tim Greene
Denver

It looks like it will still be a few months before Digital Subscriber Line (DSL) services accelerate to multimegabit speeds, but initial lower speed offerings last week from US WEST still represent bandwidth bargains.

Rather than revving up the top DSL speeds — as fast as 8M bit/sec in one direction over conventional phone lines — US WEST's Interprise group decided to go with mature ISDN-based DSL (IDSL) and High-bit-rate DSL (HDSL).

"They are proven, hardened technologies," said Jerry Parrick, Interprise president. IDSL and HDSL offer speeds of 128K bit/sec and 704K bit/sec, respectively, with US WEST promising Rate Adaptive DSL services of 2M bit/sec in one direction and 1M bit/sec in the other by year-end.

Initially, costs will be determined case by case, the company said, but it estimated a range of $75 to $175 per month. Installation will cost $300 to $500.

US WEST expects DSL to compete with its frame relay and ISDN offerings. A 56K bit/sec frame relay line, for example, costs $85 to $100 per month.

Davis County School District in Utah is buying 200 of the 704K bit/sec lines to replace 56K bit/sec and 1.5M bit/sec frame relay lines. The district's bill for 89 lines will drop from $196,000 to $106,000.

Brett Azuma, an analyst for Dataquest, Inc. in San Jose, Calif., said the prices seemed good, but wide-scale deployment will depend on pushing DSL gear into central offices. Parrick said deployment will be driven by demand.

Services will be offered to users within 18,000 feet of a DSL-equipped central office, which leaves out about a third of US WEST's customers.■

Security vendors strut their stuff

THE 1997 RSA DATA SECURITY CONFERENCE

By Ellen Messmer
San Francisco

Security vendors always come to the annual RSA Data Security Conference to strut their stuff, and this year is no exception.

VeriSign, Inc., known for its X.509 public-key digital certificates that bind a user's identity with a digital signature, will use the conference today to launch a custom version of its certificates for organizations.

Called Private Label Digital ID Services, the restricted-use digital IDs are what Visa International, Inc. and Novus Services, Inc. (the Discover card company) will issue to card carriers in the future for electronic commerce on the Internet.

VeriSign's private-label certificates offer "a way a company can put its brand on [the certificates] for use only under certain parameters," said Gina Jorash, director of product marketing.

For instance, the Visa certificates will be used only for credit card purchases on the 'Net. In contrast, a general-purpose VeriSign X.509 certificate might be used between total strangers for signing E-mail or files.

VeriSign will be getting more competition in the digital ID business from start-up Xcert Software, Inc., which today will officially launch its own Internet-based X.509 public-key management software, called the Sentry Certification Authority.

Start-up Xcert Software *aims to give VeriSign a run for its money in the area of Internet-based digital certificates.*

Sentry CA was designed to give firms a way to cross-check one another's certificates via lookups in Sentry CA's version of the Secure Lightweight Directory Access Protocol, said Xcert Director Charles Hart. Sentry CA supports a way to flexibly plug in digital signature formats using what Xcert calls Xuda API.

Entrust Technologies, Inc., a spin-off of Northern Telecom, Inc. — which developed Entrust public-key management software primarily for corporate intranets rather than the public Interent — today took the wraps off a desktop encryption product, the Integrated Cryptographic Engine.

"With *our new desktop product, just click on a mouse, and the file will be encrypted on the hard drive,"* **Entrust's Ryan says.**

Through use of an X.509 public-key certificate, "you encrypt files on a hard drive with a click of a mouse and click again to open it," said John Ryan, Entrust Technologies' chief executive officer.

Firewall vendors are also expanding their product lines. Milkyway Networks Corp. announced SecurIT Suite, which packages the firm's Black Hole firewall with new remote access and auditing components for a price of $14,685.■

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Rivals

Continued from page 1

(IFMP) would bond local and wide-area switches.

"This can provide increased performance levels across the entire network without having to go through routing," said Christopher Nicoll, an analyst for Decisys, Inc. in Sterling, Va.

"You can maintain a flat network architecture," he said.

To underscore the seriousness of their bid to wrest IP-switching mind share from router king Cisco Systems, Inc., the companies are wheeling out three of their top executives.

3Com Chairman and Chief Executive Officer Eric Benhamou, Cascade President Dan Smith and IBM Network Hardware Division general manager Lutz Hahne are scheduled to be on hand for a glitzy announcement in New York.

Early reaction to the plan is positive. "Now you've got a high-performance architecture that doesn't include routing, but you can put routing in specifically where you need it for its intelligence, not because you have to have it for connectivity," Nicoll said.

But there are cautions. "This is a nice idea in theory, but it sounds like an administrator's nightmare," said Robin Layland, principal of Layland Consulting in West Hartford, Conn. "Individual PCs controlling bandwidth access is too much for large enterprises to handle. I hope they come out with a nice administration application for this."

With drivers being written by 3Com, PC network interface cards could be upgraded to support the IP switching scheme.

IBM will make IFMP part of its Multiprotocol Switched Services software, which controls the routing, bridging, traffic and congestion functions of its switches.

According to sources, the IFMP signaling and traffic management technology is already embedded in Cascade's IP switching software, IP Navigator.

Curiously, Bay Networks, Inc. is not endorsing the scheme. Bay, 3Com and IBM are allied in the Network Interoperability Alliance (NIA), which is attempting to empower desktops to request quality of service and related issues.

"This proposal was not discussed in the context of the NIA. And because of that, we have no formal position on the 3Com proposal from the NIA perspective," said Tony Clark, director of strategy and business development at Bay.

"We have some concerns that this is yet another IP switching proposal," Clark said. "All of this stuff is supposedly being worked on within the IETF, where we thought the industry was making some progress. Instead, what appears to be happening is that the industry is diverging even more."

Bay also believes that adding IP switching intelligence at the desktop may add unnecessary complexity to the network, Clark said.

Jay Jonekait, vice president of extranet services for UUNET Technologies, a subsidiary of WorldCom, Inc., said the plan could help improve extranet service offerings. An extranet is a private IP network set up to allow authorized business partners limited access to the corporate network.

"UUNET is absolutely committed to offering business-level quality of service over the Internet. This is clearly in the direction we are going. If these products would allow us to enrich our Extranet service, then it's the kind of thing we would want to consider," Jonekait said.

"Users keep wanting more and more performance, and they want access on demand," said Lee Provow, vice president of marketing and sales at GridNet, another WorldCom subsidiary that focuses on wholesale Internet services in addition to Internet access and intranet services.

Senior Writer Denise Pappalardo contributed to this story.

Migration

Continued from page 1

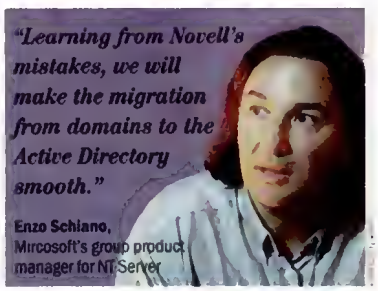
wonder why they need to endure both the cost and the headaches associated with two major server upgrades within just 18 months. And many are riled at being forced to buy into the less useful feature set of NT 4.0 in order to get at what they really want, the NT 5.0 Active Directory.

"Why should I have to put all my money and effort into 4.0 when it doesn't give me what I really need?" asked James McKane, a network manager with Tread Corp., a manufacturing firm in Roanoke, Va. McKane said his NT 3.51 servers are rock-solid, and he does not want to upset that stability for the NT 4.0 graphical user interface or the bundled Internet features. "The directory service is what is going to make my life easier, and Microsoft is essentially telling me to pay for it twice by forcing me into NT 4.0," he said.

Others point to the disruption. "Being a 24-by-7 shop, we can't afford the downtime it takes to carry out multiple upgrades," said Rick Shope, manager of PC technology and planning at NationsBanc-CRT in Chicago.

Forty-eight of NationsBanc-CRT's 50 NT Servers are running Version 3.51. Shope is planning to gradually upgrade all of them as well as 1,000 workstations to NT over the next year. However, he said, having to migrate to NT 4.0 first will likely delay the firm's eventual move to NT 5.0.

Allchin claim smoving to NT 4.0 first is necessary because it lays the groundwork for the distributed computing features expected with NT 5.0, such as the Active Directory service. For example, NT 4.0 has some support for the Unix-based Domain Naming System (DNS), which is expected to play a big role in host name space resolution in the Active Directory. Additionally, NT 4.0 servers can run pieces of NT 5.0 technology that Microsoft has already made available, such as its Distributed File System.



Observers disagree. "That is baloney. Microsoft just doesn't have a compelling business value in NT 4.0," said Neil MacDonald, an analyst with Gartner Group, Inc. in Stamford, Conn. "They did nothing with the directory. You can get the Web server they put in there free anyway. Point-to-Point Tunneling Protocol hasn't taken off, so what do you really get? It's arrogant to rope people in by threatening backwards incompatibility."

MacDonald also noted the publicized problems with NT 4.0 device driver incompatibility, video drivers taking the server down and recent NT 4.0 service pack problems, which also freeze up the server. All these have customers that are used to stable NT 3.51 systems scared to make the move.

"My NT 3.51 servers have been up since last February. I will not risk that security to prep for code that promises a lot but isn't even close to being delivered," said Josh Turiel, director of information services at Adlife Company, Inc., an advertising firm in Norwood, Mass.

There is a possibility that Microsoft will look at compatibility issues should NT 4.0 not be more widely accepted as the NT 5.0 release approaches, said Enzo Schiano, group product manager for NT Server.

But Allchin said the company is focused on making the NT 5.0 migration from NT Server 4.0 a smooth one.

"We will let users install an NT 5.0 system, and it will run with the old 4.0 domain controllers. They can put in more 5.0 systems as backup and primary domain controllers when they get more comfortable," he said. ■

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Briefs

■ **RAScom, Inc.** *last week introduced RAServer 2900, a central site remote access server that supports tunneling protocols, which offer a* **secure link across IP networks,** *including the Internet. A single 24-slot chassis can support as many as 720 analog lines or 30 Primary Rate Interface ISDN lines. Shipping now, the base chassis costs between $28,500 and $170,500.*

RAScom: (603) 898-5200.

■ **International Network Services (INS)** *said it is deploying RMON2-compliant application monitoring software that the company claims is based on the RFC 2021 standard published late last week.*

The **Remote Monitoring 2** *standard allows RMON probes to analyze information at both the network and application layers. INS' EnterprisePRO software monitors RMON2 probes from 3Com Corp., Frontier Software Development, Inc. and Hewlett-Packard Co.*

INS is upgrading all its EnterprisePRO customers to the new software at no additional cost.

INS: (415) 254-0800.

■ **Quintus Corp.** *last week announced* **help desk software** *that provides real-time information to help users resolve service issues faster.*

The Impaq software utilizes intranet publish/subscribe technology to push customer information from call centers out to user desktops. Users then can view customer data in real time through a Web browser and customize information feeds to select data most appropriate to their needs.

Impaq costs $25,000 per server and $250 per client, and will be available in the second quarter.

Quintus: (800) 337-8941.

IBM aims patents at net technology

By Michael Cooney
Armonk, N.Y.

IBM is using an odd mix of patent lawyers and research engineers to build itself a bigger role in your enterprise network.

The company last week announced that for the fourth consecutive year, it led all high-tech competitors in new information-handling technology. IBM said it hopes to turn this leading-edge technology into products that will make their way into customer networks.

Of the 1,867 patents IBM received last year, almost 400 were directly related to networking hardware and software — more than any other year.

This year, IBM had more than 50 patents granted for ATM switching and about 200 for high-speed networking. Mobile computing, LAN switching and net-based video-on-demand patents were also among the leading new technologies put forth by IBM's research labs.

One of the features IBM patented in 1996 is called dynamic cut-through, which gives an Ethernet switch the ability to automatically control and manage data traffic passing through the device. It is expected to debut in IBM's Ethernet switch this year, sources said.

"It enables the switch to operate in a store-and-forward mode or as a pass-through device, depending on the error rates of the traffic," said Marshall Phelps, vice president of intellectual property and licensing at IBM. "Operators have to perform this function manually today."

But patents do not always lead to products. IBM has been criticized in the past for leaving leading-edge technology on the lab floor. However, since 1995 IBM changed its awards system to encourage its engineers to bring products to market faster.

"Consequently, 30% of our networking and software patents issued in 1995 are already in product," Phelps said.

The company wants to bring leading-edge networking products to market quickly in an attempt to regain the technology leadership role it has lost in recent years.

IBM also gains financially from its patent work: Big Blue made $646 million in patent licensing fees in 1995.

And occasionally IBM uses its patents as a weapon against competitors. Last year, IBM tried to use its patents to prevent Cisco Systems, Inc. from developing competing mainframe channel connectivity technology (*NW*, Nov. 25, 1996, page 1).

According to Phelps, IBM has more than 1,100 patent licensing agreements worldwide, and the amount of litigation that goes on to enforce patents is small. Since 1993, IBM has received 5,633 patents. ■

IBM tops patent pack

1996 top 10 patent recipients:

Company	No. of patents
IBM	1,867
Canon	1,538
Motorola	1,064
NEC	1,042
Hitachi	961
Mitsubishi	932
Toshiba	912
Fujitsu	868
Sony	854
Matsushita	837
Others:	
Microsoft	97
3Com	20
Bay Networks	9
Cisco	3

SOURCE: U.S. PATENT AND TRADEMARK OFFICE, WASHINGTON, D.C.

Dialing in to Mr. Modem

Q&A

Cable and 56K bit/sec modems, ISDN, Asymmetric Digital Subscriber Line (ADSL) and wireless technologies — the staid world of remote access has been turned on its head as rivals attempt to speed the way your PC talks to the outside world. To sort through the activity, *Network World* Senior Writer Tim Greene spoke with G. David Forney, the "father of the modem," for his take on future technology.

Forney

How fast will analog modems get?

I think everyone feels 64K bit/sec is the absolute upper limit. But I've been proved wrong so many times before, I'm a bit gun-shy to come down too hard.

What's taking cable modems so long?

Most cable nets are not particularly well engineered upstream. It's a shared channel, so you need techniques for avoiding collisions between different users.

What's the best bet for the mobile user?

For quite awhile, there's nothing that's going to beat a plain old modem for universality.

Can V.34 modems connect more often at the highest rates they are capable of — 28.8K bit/sec or even 33.6K bit/sec?

The latest generation of modems was designed to be an intelligent, adaptive, best-effort modem that would make the best use of whatever channel it found. When you have a 33.6K bit/sec modem, it's going to go as fast as it can, subject to the channel's basic physical limits.

Have we been led to expect too much, then?

You know from Dilbert cartoons the tension that exists between the engineering side and the marketing side.

Will we see ADSL speeds faster than 8M bit/sec in one direction?

The modulation adopted is quite sophisticated. It's unlikely you will be able to do much better than that for a given line that you get on.

Frontier Webifies monitoring suite

By Jim Duffy
Chelmsford, Mass.

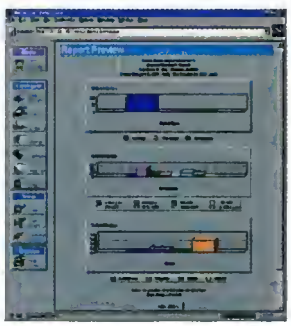
Frontier Software Development, Inc. last week Web-enabled its line of network monitoring, troubleshooting and reporting tools.

Frontier's Webcast software lets users view from a Web browser physical- to application-level traffic reports for any network topology, the company said.

Webcast also features automatic polling to update data sources while keeping network traffic to a minimum. The polling is done by Netscout Server, a domain-level data collection engine that periodically polls Remote Monitoring probes and SNMP agents within the domain.

Frontier's competitors in Web-based monitoring and reporting include Technically Elite Corp.'s DomainMeter and Hewlett-Packard Co.'s NetMetrix product line. But Frontier's offering is a little higher quality, according to John McConnell, president of McConnell Consulting, Inc. in Boulder, Colo.

Still, users found some rough edges. "Installation was a little rough," said Sam McLane, senior network analyst at Temple University in Philadelphia. "I could not get it to work with a Netscape server, but, then again, I didn't try real hard because I didn't have a lot of time."



Frontier's Webcast *allows users to view frame relay statistics via the Web.*

Webcast and Netscout Server each cost $2,495. They will be available in February.

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Briefs

■ *To boost its toll-free services,* **British Telecommunications plc** *is installing the Network Intelligent CallRouter (ICR) software from GeoTel Communications Corp. in Littleton, Mass. Network ICR enables carriers to route a company's* **800 calls** *based on agent availability and other factors to multiple call centers with otherwise incompatible automatic call distributors on the premises.*

■ **Bell Atlantic NYNEX Mobile** *last week announced Code Division Multiple Access (CDMA) service in Washington, D.C., Baltimore, Pittsburgh and Charlotte, N.C. DigitalChoice, an 800-MHz* **digital cellular** *service, offers users enhanced privacy and better call quality than analog cellular services.*

Most scanners used to eavesdrop on wireless calls are analog-based, which makes it almost impossible to listen in on a digital call. Another benefit for users is that the services are compatible with analog cellular services because the CDMA phones are dual mode.

The service is available for $14.99 to $24.99 per month, depending on the service area. Bell Atlantic NYNEX Mobile said it will offer DigitalChoice service in all of its analog cellular service areas by mid-1997.

Bell Atlantic NYNEX Mobile: (800) 255-2355.

■ **MCI Communications Corp.** *has named Robert Kamba senior vice president of network operations. A 23-year MCI veteran, Kamba previously was vice president of information technology, where he supervised data centers, applications development and customer service.*

Kamba

In his new position, Kamba will oversee the carrier's entire **global network.**

Business analysis

PSINet may be facing rough ride

By Chris Nerney
Herndon, Va.

Poor marketing and a misguided wholesaling strategy likely will spell trouble in 1997 for Internet service provider PSINet, Inc., industry analysts said.

The company earlier this month announced that total revenue for 1996 will be lower than it had previously estimated. PSINet cited as a major contributor to the shortfall "slower than expected revenue" from the wholesale ISP business, which it began last summer.

PSINet last year shifted its business model from retail to wholesale services and products to consumer-based ISPs.

That was a mistake, according to Mark Roberts, a senior analyst and principal at Montgomery Securities in San Francisco.

"PSINet is trying to sell into a market that's going away," Roberts said. "The ISP shakeout has begun."

And while PSINet founder and Chief Executive Officer William Schrader predicted "meaningful revenue growth" from the wholesale business unit in the first two quarters of '97, Roberts said he expects otherwise. "PSINet likely will continue to have disappointing results from its wholesale strategy," he said.

David Goodtree, an analyst at Forrester Research, Inc. in Cambridge, Mass., agreed that "trying to shift from a consumer market to a business market is hurting [the 7-year-old company]."

Goodtree also said PSINet suffers from an all-too-familiar problem in the high-tech universe — good products, weak marketing.

Another analyst who asked not be be identified said PSINet has valuable assets. "They have a good-size installed customer base and are quite progressive about rolling out services," the analyst said.

However, she added, "Time is not on their side. They can survive for the short term on their own. In the long-term, it will be more difficult." ■

International network services caught in tariff cross fire

By David Rohde
Washington, D.C.

If you buy international network services, a recent government ruling could create a headache for you and your carrier at contract negotiation time.

Carriers and users are discovering, to their chagrin, that the Federal Communications Commission's recent decision abolishing long-distance tariffs only applies to domestic services.

As a result, carriers must now provide new multiyear deals on ordinary commercial-law contracts excluding international services, which remain under tariff. To add to the confusion, carriers and user groups only agree on the problem, not the solution.

The SDN Users Association, a group of 450 users of AT&T's Software Defined Network service, last month told the FCC it simply should remove tariffs on international services, as well.

"This would simplify the negotiation process and would allow large customers to include all of their telecommunications services in one contract," wrote Reginald Bernard, the group's president, in a petition to the

See Tariffs, *page 18*

Cascade sets priorities for frame relay vendors

By Tim Greene
Westford, Mass.

Cascade Communications Corp. last week introduced software to support specific levels of frame relay service quality so carriers can guarantee on-time delivery of tempermental traffic types, such as SNA and voice.

Priority Frame for Cascade B-STDX 8000 and 9000 switches will do that by supporting four different service levels tailored to specific traffic: top priority for video; then voice; then LAN-to-LAN and business 'Net access; and finally, E-mail, file transfer and residential 'Net access.

Carriers have to embrace the technology for users to take advantage of it, and some carriers have shown interest.

Frame relay specialist Intermedia Communications, Inc. (ICI) in Tampa, Fla., said it will integrate Cascade's software enhancements into its network by the end of the second quarter.

Based on Priority Frame's capabilities, ICI will guarantee the performance required by specific applications, according to Greg Tennant, director of marketing services at ICI.

Priority Frame helps address delays introduced when high-priority packets get stuck waiting around for long, low-priority packets to pass through the switch. The new technology chops up those longer frames into shorter ones — 280 bytes or less — which cuts delay and makes for a more even flow.

The software also enables carriers to set four distinct qualities of service (QoS) on the switch. Each class of service is assigned to a separate queue supported by permanent virtual circuits (PVC) large enough to guarantee a particular QoS.

Priority Frame addresses delay and packet loss within a Cascade network, but not the access circuit, said Christopher Nicoll, an analyst at Decisys, Inc., a consultancy in Sterling, Va.

To do that, users would have to buy separate PVCs for each QoS they wanted, which would drive up the overall cost.

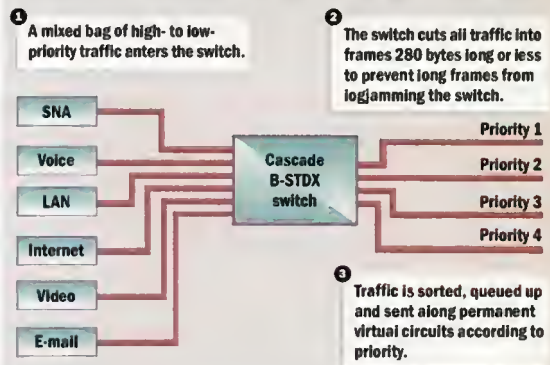
Cascade is among three vendors and three carriers that have asked the Frame Relay Forum to standardize definitions of delay and frame loss, which are key to writing service-level guarantees.

Other switch vendors have similar answers. Northern Telecom, Inc.'s Passport switch has Multiple Priority System, which is structured around switching queues, said John Cassadonte, product manager at Nortel.

Senior Writer Denise Pappalardo contributed to this story.

FRAME RELAY QUALITY OF SERVICE

Cascade's Priority Frame assures delay and frame loss will stay within bounds.



TCG pays $67 million to CERFnet

By Denise Pappalardo
New York

If you can't build it, buy it. This is the philosophy Teleport Communications Group (TCG) followed earlier this month when it announced plans to acquire CERFnet, a San Diego-based Internet service provider (*NW*, Jan. 20, page 8).

The joint company's first move will be to offer dedicated Internet access in seven new markets during the next six months. Analysts agreed this is a favorable move for TCG for competitive reasons. For CERFnet, it means survival, they added.

CERFnet lacked the entrepreneurial spirit of many of its competitors because the Internet is not the prime business of General Atomics, CERFnet's parent company, said Rebecca Wetzler, director of Internet services at TeleChoice, Inc., a Verona, N.J.-based consultancy.

Today, CERFnet offers dedicated T-3 access to cities such as San Francisco, Los Angeles and San Diego, and dial-in access nationwide, said Pushpendra Mohta, CERFnet's executive vice president. TCG's national installed net and its 38-GHz wireless licenses will let CERFnet expand its reach.

Although CERFnet plans to expand its private backbone from 45M bit/sec to 155M bit/sec, TCG has no immediate plans to use it to offer commercial long-distance services. Currently, TCG offers only local services, including LAN interconnect, Synchronous Optical Network (SONET), private lines, Centrex, voice mail and connections to local and interexchange carrier points of presence.

The company said it expects to offer deals for users that bundle Internet access service with other TCG services.

Senior Writer Tim Greene contributed to this story.

Tariffs

Continued from page 17

commission. Other user groups chimed in with similar pleas (see graphic).

But in a nearly simultaneous petition, AT&T suggested the opposite solution: Temporarily put multiyear domestic term deals back under tariff for users that want to bundle domestic and international services. Alternatively, AT&T said the FCC could leave it up to the carrier whether to put the entire deal under an ordinary contract or a tariff.

Count me in

Companies and user groups filing petitions to detariff international services:

- SDN Users Association
- Ad Hoc Telecommunications Users Committee
- California Bankers Clearing House Association
- New York Clearing House Association
- ABB Business Services
- Prudential Insurance Co. of America

SOURCE: FCC, WASHINGTON, D.C.

AT&T said the problem is urgent, because at the time the FCC ordered the abolition of tariffs last October, AT&T had more than 2,000 mixed domestic and international customer deals in the pipeline.

To sweeten its offer, AT&T said it would allow a new rider to be placed on mixed tariffed deals: a certification of customer consent to any future tariff filing that alters a term plan. The right of carriers to alter tariffed deals midcourse is the practice that provoked users' ire and led the FCC to abolish tariffs in the first place.

The FCC will have to resolve the problem in the shadow of a lawsuit filed by MCI Communications Corp. in federal appeals court to overturn the entire decision. MCI is expected to argue that almost every party that filed comments on the FCC's proposal to abolish tariffs opposed the idea — large user groups being the key exception. ■

Microsoft SQL Server

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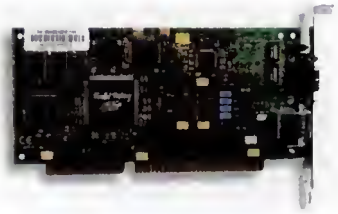

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The big nemesis: Microsoft file sizes

This year could probably be called the year of "one step forward, one step back."

We expect to continue taking serious steps forward in making higher speed access into the home and office more ubiquitous. Switched 56K bit/sec is rolling out in Internet service provider central offices, ISDN is continuing its slow growth across the U.S., and cable modems and xDSL are rolling out at their own deliberate pace.

Things were looking rosy going into 1997...until Microsoft Corp. came out with Office97. It represents Microsoft's next big upgrade of the major programs — Word, Excel and PowerPoint. You cannot ignore anything that Microsoft does, and certainly nothing as big as Office97.

Daniel Briere and Christine Heckart

The problem is Office97 continues the trend toward bigger files — much bigger files. Several early looks by some of the computer trade publications and online resources have made only slight notations about operational specifications in their reviews, to the point where we wonder if they see the problem. Their focus has been instead on the new functionality and the greater integration of Internet Explorer. But the difference in file size is not minor. If you open an Excel95 file and then save it in Excel97 format, it increases in size by 40%, at least according to some accounts.

Wow, here we are all excited that we are doubling our 33.6K bit/sec modem access to 56K bit/sec, or installing ISDN, and the software is taking that progress away with file size increases. Not to mention what it does to your hard drive. Don't think you can take a 3-year-old computer and load new versions of these old favorites and still have any meaningful productivity without adding more memory or boosting the drive. All this can really hit your remote access strategies hard, not to mention your WAN plans.

We have a lot of small remote offices in our company, and lately we have been using Internet-accessible versions of our E-mail, calendaring, contact database and other internal software programs.

Our initial tests with large files of the size promised by Office97 reveal a whole new layer of complexity and problems. The biggest problem for us is enclosures to E-mail; a document from a publishing program can grind the inbound E-mail to a screeching halt. One enclosure, a mere 2M bytes, recently took more than a half hour in transfer time, tying up the E-mail program for the duration.

The application software and net work hand-in-hand. Doubling your access bandwidth does nothing for improving worker performance if the benefit is more than eaten up by ballooning application file sizes. The point of adding in greater access bandwidth is to increase productivity, not merely keep up.

This, if nothing else, points to the need for using program applets stored centrally on a network instead of locally storing these huge software programs on every machine since most people don't use most of the features most of the time.

Briere is president and Heckart is director of broadband with TeleChoice, Inc., a consultancy in Verona, N.J. They can be reached at dbriere@telechoice.com and checkart@telechoice.com.

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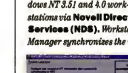
Briefs

■ **Novell, Inc.** *has released beta software that lets administrators centrally manage Windows NT 3.51 and 4.0 workstations via* **Novell Directory Services (NDS).** *Workstation Manager synchronizes the work-*



Workstation Manager

station user IDs and passwords with those of the network, giving end users a single logon process. Administrators can manipulate NT workstation management utilities through NDS.

Workstation Manager, which will ship as part of Novell's IntranetWare client for NT next month, is now available via the Web at support.novell.com/home/pubbeta.

Novell: (888) 321-4272.

■ **Lantronix, Inc.,** *a hub maker based in Irvine, Calif., has unveiled a suite of* **Fast Ethernet repeaters.** *The devices, which come in four-, eight- and 12-port versions, provide customers with 100M bit/sec Ethernet connections for workgroups and can be used to link to Fast Ethernet switches and servers. Pricing for the hubs starts at $495, and all products will be available in February.*

Lantronix: (800) 422-7055.

■ **3Com Corp.** *last week announced it has partnered with several PC vendors — including* **Dell Computer Corp., Gateway 2000, Inc.** *and* **Hitachi PC Corp.** *— to deliver PCs preconfigured with 3Com network interface cards. The program, dubbed 3Com Network Ready, helps eliminate costs associated with installation and configuration.*

3Com: (408) 764-5000.

Intel sets networking course

Recent acquisition of Case and investment in Xircom add to momentum.

By John Robinson

On the network court six years ago, Intel Corp. would have been picked last for a game of switching, routing and hubs. The company simply was not an internetworking player.

But Intel has been working on its game through internal development, partnerships and acquisitions. It is sending a signal to established net players: Put me in the game, and for Fast Ethernet, make me team captain.

With the $72 million acquisition this month of Case Technology, a switching and router company, and a $52 million investment in Xircom, Inc., a mobile communications outfit, Intel accelerated its networking growth.

Intel was attracted to Case for its Fast Ethernet switch technology, and for its 10M bit/sec switch, which Intel officials said gives users a near-term solution before Fast Ethernet takes hold. Intel plans to start selling the switch, and Case's branch office router, by April.

Mark Christensen, vice president of Intel's Internet and Communications group and general manager of the Network Products Division, claims the division earned $500 million in revenue last year, including revenue from management software sales. Intel reported total revenue of $20.8 billion for 1996.

For Intel to break into the billion-dollar club, it needs to satisfy three objectives:

- Focus efforts on the Fast Ethernet market.
- Lower the cost of ownership and operation for networked computers.
- Provide a higher bandwidth network infrastructure.

But some wonder why the processor powerhouse is focusing on the crowded network marketplace.

"I am a little befuddled by the extent to which Intel is spreading its wings," said Virginia Brooks, director of network research with Boston-based Aberdeen Group, Inc. "How successful can any company be when competing on a broader number of fronts?"

Christensen admitted Intel is late to market but says development of Fast Ethernet will propel the division's growth. The company delivered a 10M/100M bit/sec Fast Ethernet adapter in October 1994, and promises switching products this year (see graphic).

"We think we are tied with 3Com for Fast Ethernet," Christensen said, adding that Intel's reseller channel and "core competencies" will push the company ahead.

Intel is also tackling network management, building on an initiative last year with IBM to lower operational costs for networked PCs. Industry observers said it is no mystery why Intel and others are focusing on this area.

"The Intel announcement was a defensive move, as some of the PC manufacturers are coming out with network computers," said Bob Sakakeeny, an analyst with Aberdeen Group. "It wasn't a surprise."

Christensen agreed. "The whole concept of the thin-client PC maybe woke us up a bit," he said, adding that Intel is working with partners to counter network computers with network PCs — desktops with varying degrees of functionality that can be set by an administrator.

Analysts generally agreed Intel has the ability to manufacture competitive network products, but warned that making a name for itself in this market segment and gaining customer trust will prove more difficult than product development.

"The things Intel has done have been very intelligent," Brooks said. "I just wonder how far from the desktop they are going to roam with this expansion." ■

INTEL'S NETWORK BUSINESS BUILDING BLOCKS

May 1991: Acquires LANSystems to form Network Management Business Unit.

May 1992: Cofounds Desktop Management Task Force.

October 1992: Announces beta of LANDesk software family for local network management.

October 1994: Introduces 10M/100M bit/sec Fast Ethernet adapter.

1991 1992 1994 1995 1996 1997

September 1995: Introduces Express Stackable Hub and next-generation EtherExpress PRO/100 Adapter.

October 1996: Forms alliance with IBM to reduce network management costs.

December 1996: Divides networking products into two divisions – Network Products and Systems Management.

January 1997: Acquires Case Technology, invests in Xircom.

Bay expands Ethernet lineup

By Jim Duffy

Santa Clara, Calif.

Bay Networks, Inc. has expanded its BayStack line with new Ethernet switches, hubs and media converters.

The company's BayStack 302 switches are available preconfigured with eight half-duplex 10Base-T ports and either a 100Base-TX or 100Base-FX port in half- or full-duplex mode. The BayStack 302 supports 16,000 media access control (MAC) addresses.

The BayStack 50 Series includes new hubs that are available in four-, eight- and 16-port models. They are designed to provide low-cost connectivity to individual desktop machines and groups of workstations in one cubicle.

Bay also rolled out its BayStack 30T and 30F Fast Ethernet media converters, which function as MAC-layer bridges. They are designed to provide performance gains, integration of 10M and 100M bit/sec nets, and creation of 100M bit/sec campus nets using fiber. "I don't know of any other big vendor that has converters like that," said Don Miller, an analyst at Dataquest, Inc. in San Jose, Calif.

In addition, Bay's Commercial Business Unit introduced an entry-level switch, dubbed the Model 2216T. It delivers switched 10M bit/sec to the desktop through 16 half-duplex 10Base-T ports and boasts 1,042 MAC addresses per switch. Also standard for the 2216T is a half-duplex 100Base-T port.

©Bay: (508) 670-8888.

Bay extends Ethernet hub and switch lines

Product	Pricing	Availability
BayStack 302 switch	$2,495 (100Base-TX uplink) $3,295 (100Base-FX uplink)	February
BayStack 50 Series hub	$149 (4 ports) $259 (8 ports) $499 (16 ports)	February
BayStack 30 converter	$1,095 (100Base-TX) $1,495 (100Base-FX)	Now
Model 2216T desktop switch	$2,125	Now

IRED WINDOWS

How to make an NT price comparison

There's been some muttering of late about the increased cost of Windows NT Server 4.0 compared to Version 3.51. I went to the horse's virtual mouth — Microsoft Corp.'s Web site — to check.

The first thing I noticed was a comparison of buying NT Server 4 vs. NetWare 4.1. For 150 users, NT Server costs $5,621, while NetWare costs $13,380. That's the base price for NT, while NetWare's base of $4,199 was increased by adding in services that are included in NT Server.

The full comparison can be found via the Web at www.microsoft.com/windows/common/aa347.htm).

Astute readers will see that most of the add-ons for NetWare 4.1 are in Novell, Inc.'s new IntranetWare offering. Based on published prices, 50-user versions of NT Server 4.0 would cost $2,447, while a 50-user copy of IntranetWare would be $4,995. Raise that to 250 users, and it costs $9,037 for NT and $12,495 for IntranetWare. (Prices for NT can be found at www.microsoft.com/windows/common/aa268.htm, and prices for IntranetWare can be found at www.novell.com/catalog/pl/pl14105.html.)

Looks like NT has the clear lead, right? Well, it depends on how you view it.

Most people will be upgrading, not buying outright. So if we consider upgrading NT from Version 3.51 to 4.0 and upgrading NetWare 4.1 to IntranetWare, what's the price? For 50 users, the NT upgrade costs $1,217, while the change to IntranetWare costs $995.

One reason for this complication is that NT is priced as a server operating system plus a client access license. The client access license can be distributed by two methods — per server or per seat — and must be used throughout the enterprise.

Dave Kearns

Per-server licensing is like Novell's connections-per-server method; with 250 client licenses, no more than 250 simultaneous users can be connected to that server. With two NT servers, clients would need two licenses to attach to both simultaneously. With per-seat licensing, clients can connect to any and all NT servers with only one license, but each client needs a separate license.

If you have only one NT server, then per-server licensing based on the maximum number of simultaneous clients would be the clear choice. Suppose there were multiple NT servers, and you run two or more shifts. Which licensing method do you choose, and what will it cost?

Here's your homework: Say you have three NT servers and 500 people who need access to at least one server. Which method is best, and what's it going to cost (based on the prices published at the URL listed above)? Further information: The three servers have maximum concurrent usage of 100, 150 and 250 clients. Message me with your answers at dkearns@msn.com, and I'll publish the correct answer next week.

Kearns, a former network administrator, is a freelance writer and consultant in Austin, Texas.

Tip of the week

In response to my recent column on NT security, one reader recommended visiting www.security-online.com, a new service designed to become a central repository for security information.

At the COMNET '97 show in Washington, on February 5, there will be a "Switching Showdown" involving 3Com, Bay, Cabletron and Cisco, the billion-dollar companies in our industry. Xylan believes that events of this type offer a valuable opportunity for users to compare the capabilities of vendors' products. We urge those Network World subscribers who will be at COMNET '97 to attend this event.

It's obvious that powerful campus switching systems require much more than simple Ethernet switching. So, to assist those who will be attending this event, we've prepared a Switching Scorecard of capabilities. Since Xylan is not represented, we have completed the column for our products.

	Xylan	3Com	Bay	Cabletron	Cisco
LAN Switching					
any-to-any MAC-layer translation	✓				
multi-RISC, multi-ASIC frame switching	✓				
max # switched Ethernet ports	96 to 256(Q2)				
Ethernet 10BaseT, 10Base2, 10Base5, 10BaseFL	✓				
max # switched Token Ring ports	48				
Token Ring lobe, device, RI/RO, UTP, STP, fiber	✓				
max # FDDI ports	16				
max # FDDI TP/PMD (CDDI) ports	64				
max # 100BaseTX ports	64 to 96(Q2)				
max # 100BaseFX ports	16 to 64(Q2)				
max # ATM DS-3 / E3 uplink ports	16				
max # ATM OC-3 uplink ports	16				
max # ATM OC-12 / STM-4 uplink ports	8(Q2)				
broadcast throttling, configurable per port	✓				
802.1d transparent Spanning Tree bridging	✓				
source route / transparent bridging	✓				
LAN / ATM encapsulation (RFC 1483)	✓				
Classical IP over ATM (RFC 1577)	✓				
ATM Forum LANE client	✓				
ATM Switching					
cell matrix fabric rate	13.2 Gbps				
single-stage non-blocking distributed processing cell matrix	✓(Q1)				
support for CBR, rt-VBR, nrt-VBR, ABR, and UBR	✓(Q1)				
max # traffic priority levels	15(Q1)				
switched and permanent point-to-point circuits	✓(Q1)				
switched and permanent point-to-multipoint circuits	✓(Q1)				
max # AAL1 T1 / E1 circuit emulation inputs	16(Q2)				
max # ATM 25M ports	192(Q2)				
max # ATM DS-3 / E3 ports	48(Q2)				
max # ATM OC-3 / STM-1 ports	64(Q1)				
max # ATM OC-12 / STM-4 ports	16(Q1)				
max # cell buffers per switch	2,097,152				
max # cell buffers per port	131,072				
max # virtual circuits per port	65,000				
load balancing between parallel links	✓(Q1)				
ATM Forum LANE server	✓(Q1)				
ATM Forum PNNI 1.0	✓(Q1)				
ATM Forum IISP	✓(Q1)				
ATM Forum UNI 3.0 and 3.1	✓(Q1)				
ATM Forum Traffic Management 4.0	✓(Q1)				
Early Packet Discard (EPD), Partial Packet Discard (PPD), Random Early Detect (RED)	✓(Q1)				
Explicit Rate and Relative Rate flow control	✓(Q1)				
Explicit Forward Congestion Indication bit	✓(Q1)				
Platforms					
all platforms share software, hardware, ASICs, and management agent	✓				
redundant management modules	✓				
hot-swappable switching modules	✓				
hot standby ATM line protection	✓(Q2)				
optical bypass support for FDDI	✓				
redundant, load-sharing, hot-swappable power supplies	✓				
-48 VDC power option	✓				
passive backplane	✓				
hot-swappable cooling fans	✓(Q1)				

	Xylan	3Com	Bay	Cabletron	Cisco
LAN / ATM Integration					
LAN and ATM in a single switch	✓				
full slot transparency: any slot can switch cells or frames	✓				
cell and frame modules linked with high-speed SAR function	✓				
Routing and Security					
IP RIP	✓				
IPX RIP	✓				
IP RIP II, OSPF	✓(Q1)				
IP BGP4	✓(Q2)				
IP multicast (DVMRP, IGMP)	✓(Q1)				
DHCP BootP relay	✓(Q1)				
high-speed hardware-based routing engine	✓(Q1)				
IP security firewall	✓(Q1)				
network number translation	✓(Q1)				
authenticated-user VLANs	✓(Q2)				
Virtual LANs					
automatic policy-based VLANs	✓				
max # VLANs per network	65,000				
max # VLAN memberships per workstation or server	31				
VLAN defined as a collection of switch ports	✓				
VLAN defined as a list of MAC addresses	✓				
VLAN defined as a protocol type	✓				
VLAN defined as an IP subnet	✓				
VLAN defined as an IPX network number	✓				
VLAN defined by a custom field	✓				
VLAN defined as a multicast group	✓				
VLANs trunked across FDDI	✓				
VLANs trunked across Fast Ethernet	✓				
VLANs trunked across ATM	✓				
VLANs trunked across frame relay	✓				
VLAN membership maintained for mobile users	✓				
modified 802.10 VLAN trunking	✓				
IEEE 802.1q VLAN trunking	✓(Q2)				
WAN Access					
max # Frame Relay ports	64				
V.35, RS-232, RS-422 / RS-449, RS-530, and X.21 ports	✓				
routed frame relay	✓				
switched frame relay integrated with VLANs	✓				
multiple VLANs in a single DLCI	✓				
Frame Relay Forum data compression (FRF.9)	✓				
max # individual compression code tables for virtual circuits	200				
ISDN BRI	✓(Q2)				
Network Management					
graphical VLAN management application	✓				
access via any LAN type, ATM, frame relay, serial port, TELNET, TFTP, and BootP	✓				
graphical traffic management application	✓				
graphical RMON application	✓				
OpenView for Windows	✓				
OpenView for Unix	✓				
Sunnet Manager	✓				
NetView for AIX	✓				

Bring your Switching Scorecard to Xylan, at Booth #390 Hall C, to receive a free 200-page "Switching Book."

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PC World said, "The (IBM) Network Printer 12's $1250* street price is the lowest on the monochrome chart, and its two-pages-per-minute graphics speed is one of the fastest." (January 1997)

Computer Shopper said, "IBM has come up with a winning combination for medium-size networks... that need reliable, fast printing.... Installation of the Network Printer 17 on our Ethernet network was one of the quickest and easiest we've ever performed." (December 1996)

PC Magazine said, "The IBM Network Color Printer will satisfy the needs of both business users who need simple color output for reports and presentations and desktop publishers who want nearly photographic-quality output." (October 1996)

IBM Printing Systems Company says, "Call us now at 1 800 358-6661, choose the 'Printer Selection Center' option, and find out more about the network printers lots of people are talking about." If you'd like to read the reviews mentioned here, visit us at www.can.ibm.com/ibmprinters

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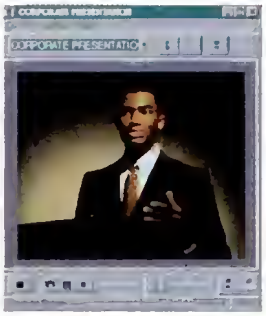
*As quoted in *PC World*. Actual prices may vary from dealer to dealer, and depending on offerings, options.

Client/Server Applications

Covering: Databases • Messaging • Groupware
Conferencing • Imaging • Multimedia • Development

Briefs

■ **Precept Software, Inc.** *of Palo Alto, Calif., today will announce a new version of its* **IP/TV video distribution application** *that supports MPEG. The new version has an*



enhanced Slidecast feature that lets video presenters and their demonstration materials be seen simultaneously on PC screens.

IP/TV uses standard IP multicast and is available as a client/server application, a Netscape Communications Corp. browser plug-in or an ActiveX control. It runs on Windows 95 and NT. Prices include the IP/TV Server at $1,995, the client viewer at $195 and the IP/TV Program Guide at $995.

Precept: (415) 845-5200.

■ **JetForm Corp.** *of Ottawa this week will announce JetForm 5.0, the latest version of its flagship* **electronic forms** *software suite. The release includes 32-bit Dynamic Forms with OLE automation and tighter Web links. A general release is planned for March.*

JetForm: (613) 230-3676.

■ **NobleNet, Inc.** *of Southborough, Mass., last week released NobleNet Secure, a tool set for building* **security and encryption** *into networked applications. The domestic version comes with software interfaces for the following security standards: DES, RIVc4, XOR, MD5 and SHA. Pricing is $2,500 per platform, with a five-user license.*

NobleNet: (508) 460-8222.

Domino tops Lotusphere agenda

Web-based technology expected to be front and center at annual Lotus get-together.

By Paul McNamara
Orlando, Fla.

When the denizens of Notes Nation converge on Lotusphere '97 here this week, they will be looking to get a Mickey Mouse-size earful about two topics: Domino and Java.

Lotusphere 97

Lotus Development Corp.'s popular user conference kicked off on Super Bowl Sunday after selling out months ago.

"You can expect the emphasis to be on Internet-related technology," said Ken Bisconti, Notes marketing manager. "There will be some pretty exciting stuff."

Whether that means a peek at Notes 5.0, neither Bisconti nor others at Lotus would divulge. But Domino, Lotus' entry in the Internet groupware race, will surely be on display.

"We're really excited about Domino, and I think most people going to the show are, too," said Paul Pinella, director of enterprise product management at Individual, Inc., a Lotus Business Partner in Burlington, Mass.

Individual's software, First for Lotus Notes, is providing a news service at kiosks sprinkled throughout Lotusphere.

Recruiting additional Domino converts will be among the key goals for Lotus during its five-day Florida lovefest, said David Marshak, a senior consultant at Patricia Seybold Group, Inc. in Boston.

Marshak said the company needs to address its internal "tension [between] promoting the Notes client as the best place to live and promoting browsers with Java as the ultimate client, then competing on the server side by saying Domino is much more open because [it] can do calendar/scheduling with anybody's browser."

Having quelled most notions of the Web being a Notes killer — at least for the moment — Lotus needs to build momentum in the 'Net arena, according to Rob Enderle, an analyst at Giga Information Group in Santa Clara, Calif.

"[Lotusphere] should be focused more on the Domino aspect of the offerings and less on the proprietary nature of the platform, and a certain amount of defocusing on the desktop," Enderle said. "[This means] not as much emphasis on things like SmartSuite and perhaps a little bit heavier emphasis on Components, which is more of a server-based implementation."

Few attendees contacted are expecting anything earth-shattering to be announced. After the year Lotus had in 1996 — shipping the Notes 4.5 client and making a huge splash with Domino 4.5 server — expectations may be lower.

"They got religion, and they migrated Notes into the intranet space," said Doug Savery, staff director at NYNEX Corp. in Marlborough, Mass. Savery would, however, like to see Lotus do more for the Notes client.

"They have left the Notes client pretty much unchanged, and the major development work has been in the Internet and being able to have the client be a browser," he said. "But a customer with a Lotus Notes client needs that interoperability with that Domino-formatted server. They need to make it seamless." ■

Lotusphere '97 third-party product preview

Vendor	Announcement	Details
GWI Software Vancouver, Wash.	Hslp 5.0, hslp desk tool for Notes snd Domino customsrs	Adds Wsb-based self-help options; routing snd trscking of incidsnt rsports.
Candis Santa Monica, Calif.	IntelliWstch Monitor for Notes 4.5, which detects snd corrects server problems	Includes new remote monitoring snd recovery fsstures.
Casahl Technology Osnville, Calif.	Late Frbrusry reissse of Rsplic-Action 4.5, s data integration system	Now fully Web-ensbled through Lotus Domino 4.5 server.
Trend Micro Cupertino, Calif.	Msrch release of ScanMail for Lotus Notes	Detects viruses in attachments to cc:Mail snd Notes dstebases st ths server.

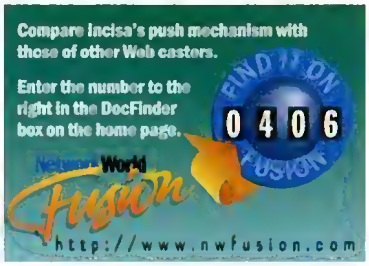
Information broadcasting

Wayfarer refines Web cast data

By John Cox
Mountain View, Calif.

Wayfarer Communications, Inc. last week released software to help companies manage the traffic flooding their private Webs, providing end users with only that information needed to do their jobs.

Incisa is based on Wayfarer's Quickserver message-based server, which uses a proprietary protocol to ensure high-performance data transmission over low-bandwidth, wide-area links.



Incisa consists of new server and client software that condenses information to a headline and summary. It provides one or more links the desktop user can click on to find the full story and related information on the 'Net or intranet.

By contrast, other Web casting products transmit data indiscriminately to all subscribers.

Ingenius, an Englewood, Colo., company jointly owned by Tele-Communications, Inc. and Reuters Holdings PLC, plans to use Incisa for delivering multimedia stories and as many as 20 international newsfeeds into schools via the Internet. Jamie Durkee, head of the company's research and development group, reviewed many of the most popular Web casting products before selecting Incisa.

"Out of the box, this product has the ability to push information over the Internet, but it also gives you a set of easy-to-use tools to control the flow of information throughout the network," he said.

To get this same capability with other tools, Durkee said, Ingenius would have needed to turn high school teachers into Webmasters and programmers. "With Incisa, they can insert their own data, including links to internal Web sites as well as external sites, and it's as easy as sending E-mail," he said.

Web casting products used inappropriately can increase "information clutter," warned Carl Lehmann, an analyst with META Group Inc., a Stamford, Conn.-based research company. Corporate users should look for ways to integrate these products with existing E-mail and groupware systems, he said.

"All these technologies are [really] components of a broader concept — knowledge management," Lehmann said. "Companies are trying to get a handle on a wide range of information resources."

Incisa is available now. Pricing starts at $50 per concurrent user. A $5,000 license lets 100 concurrent users link to the server and includes an Internet connection to Wayfarer's operations center, as well as three newsfeeds and stockfeeds.

✆Wayfarer: (800) 300-8559.

SHARED LOGIC

Making it through Oracle's middleware maze

Connecting the client to the server is what client/server is supposed to be about. Surprisingly, it remains one of the most confounding problems for application developers even as client/server enters its mature years.

A case in point is Version 2.0 of the software my company sells. We've added a port to the Oracle7 database, and sorting out the connectivity issues has revealed the amazing complexity of creating a seamless interface between a Windows-based client and a robust back-end server.

While Oracle Corp.'s software support can seem unjustifiably expensive, with yearly costs as high as 50% of the original cost of the software, I can now understand why the company has to charge so much: It requires many hours per customer to configure the environment correctly.

The Oracle support is well worth the money. The technical personnel are helpful and, if you pay for it, available around the clock.

Of particular interest to us was how to configure the middleware layers between our program's SQL logic and the Oracle database. Some of the latest middleware products offered by Oracle as part of its new Programmer 2000 package include Objects For OLE 2.0, SQLNet 2.3, the Required Support Files and the Oracle ODBC driver 1.16.

Oracle helped us resolve the creation of a matrix showing which Oracle products were already compatible with each other, and which products were potentially compatible. Oracle can guarantee that all of its latest stuff works together, but when you start to mix different releases of the components, it's a crapshoot.

Marc Myers

This is all further complicated by the fact that the client can run in a 16-bit Windows 3.1 or 3.11 mode, or in a 32-bit Windows 95 or NT mode. But here are a few shortcuts to help you set up the Oracle middleware environment:

- First, determine whether your software will be 16-bit or 32-bit. This decision should be driven by two factors: what is possible, given your development environment; and what platform you need to deploy on. If you have to deploy on Windows 3.1, as we do, then you have to build a 16-bit application. Note that 16-bit applications run quite well on Windows 95 and NT.
- If you build both a 16-bit and a 32-bit version of your application, prepare for installation nightmares. I wouldn't recommend this unless your application is a purely client-side tool.
- Call Oracle technical support and describe what you want to do. Really. That's what we did, and we were pointed to all the right places, including specific Web pages and a faxback service.
- Once you've got your basic components selected, create a matrix of what will definitely work together, as promised by Oracle, and what could work together on a good day. This way you can tell your end users, "These configurations work, these other configurations just might work, and anything else is your own personal science project."

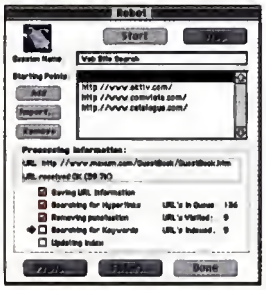
Myers is CEO of Client/Server Connection, Ltd., a New York-based software development company. He can be reached via the Internet at mmyers@cscl.com.

Intranets & the 'Net

Covering: Internet Technologies and Services for Collaboration and Electronic Commerce

Briefs

■ *Next month,* **Maxum Development Corp.** *expects to ship Phantom 2.0, a $395 Macintosh-based Web crawler and search*



engine that lets Webmasters build **targeted search and retrieval** *capabilities into their sites.*

Maxum: (630) 830-1113.

■ **EveryWare Development Corp.** *today started shipping the Macintosh version of FileMaker 2.1, a $349 visual drag-and-drop development environment for creating Web-based applications that* **connect to back-end databases.**

The upgrade includes new features such as support for Quarterdeck Corp.'s WebStar API as an alternative to the standard Common Gateway Interface.

A Windows version of the product is expected in early spring.

EveryWare: (888) 819-2500.

■ *Atlanta-based electronic data interchange software and service vendor* **Harbinger Corp.** *has purchased Ann Arbor, Mich.-based EDI SupplyTech, Inc. in a deal valued at approximately* **$44 million.** *SupplyTech will operate as a division of Harbinger.*

■ *In a survey of 600 technical professionals in business organizations, Boston-based research firm* **Delphi Consulting Group** *found that 37% of the organizations now have more than 75% of their desktops connected to a corporate* **IP-based intranet.** *In three years, that number is expected to grow to 82%.*

SmartTran moves mainframe applications to the Web

By Carol Silwa
San Jose, Calif.

Mainframe applications can be a pain to navigate. For instance, if you want to hop from the first screen to the 14th and then the 20th, you often have to go through each page in sequence — not exactly the most efficient approach.

But with EnterpriseLink Technology Corp.'s new SmartTran software, developers can reengineer mainframe applications into Web applications without tampering with the legacy code. Instead of going screen to screen, the user can hop around just by clicking the appropriate link.

Unlike some other tools, the mainframe data is not simply redisplayed in a Web browser. Rather, the "ugly, horrible mainframe screen," as one company official put it, is transformed into a neatly designed Web page that users can access through any standard browser.

"What EnterpriseLink brings to the table that sets it apart from its competition is the ease-of-design approach for creating new interfaces to the mainframe," said Cindy Borovick, manager of computer networking architectures at Framingham, Mass.-based International Data Corp.

MAINFRAME DATA GETS WEB FACE

Host screens from the mainframe application can be dragged and dropped onto a Web page template, where a developer can use Web authoring tools to create a Web-enabled application.

Each mainframe data element becomes an object the developer can control and, if desired, link with Java, ActiveX or Visual Basic scripts.

With SmartTran, mainframe applications are turned into objects that can be reassembled into Web pages. Several mainframe screens, or merely the fields within them, can be mapped onto a single Web page.

The SmartTran product suite includes three pieces:

- A Loader that lets developers review host screens and create components from them.
- A Builder that lets developers drag and drop the objects for reassembly in a Web page. SmartLink components are mapped to templates that become the foundation of a new Web application. The templates can be manipulated with Web authoring tool products. The objects can be linked with databases or integrated with Java, ActiveX or Visual Basic components.
- Run-time server software that transforms a Windows NT server into a Web-to-mainframe front-end processor so no burden is placed on the mainframe.

None of the software pieces run on the mainframe or the client. Instead, the processing is done on a middle-tier server.

"This gives the user a three-tier client/server model," said J.C. Dorng, EnterpriseLink's president and chief executive officer.

SmartTran, available now, is priced at $125 per user in volume.

✆EnterpriseLink: (408) 369-2270.

Banking software rivals agree on spec

By Ellen Messmer

CheckFree Corp., Intuit, Inc. and Microsoft Corp. want to make online banking easier. As part of that effort, the three recently released a draft specification called the Open Financial Exchange (OFX) aimed at Web-based online banking and brokerage services software.

"We want to have *a final version of the OFX spec out in mid-February," says CheckFree's Mark Johnson.*

Proprietary software such as the current versions of Intuit's Quicken and Microsoft's Money place a burden on banks, which must support multiple formats online and in their back-end systems, executives from the three companies recently said.

"It would have been foolish not to listen to the feedback we were getting," said Lewis Levin, vice president of Microsoft's desktop financial division.

The OFX specification would let vendors build client/server software products for exchanging investment and account data using HTML with either Java or ActiveX. Data would be encrypted using Netscape Communications Corp.'s Secure Sockets Layer or Microsoft's Private Communications Technology.

The next versions of Quicken and Money, due out in the fall, are expected to be based on the OFX specification.

Sources also hinted that in the near future Microsoft will be fielding OFX-based servers for the financial community to compete with the Web-based server IBM custom-made for investment firm Charles Schwab & Company, Inc.

Mark Johnson, director of business services at CheckFree, said OFX will also provide backward compatibility to software now on the market. But plenty of compatibility issues still remain.

A dozen banks, including Banc One and Bank of America, are well along in working with IBM to build a shared network dubbed Integrion, based on an IBM spec called the Gold Messaging Standard. Work is under way for a common translation method between the two specifications. ■

'NET INSIDER

But will they pay attention *this* time?

I have been told the Eskimos have a hundred or more words for snow, each denoting some slightly different type, most of which would be indistinguishable to an observer who did not have to deal with snow quite as intimately as the Eskimos do.

We may need to start coming up with additional, more specific alternatives to the word "clueless" in the networking world. We could even invent a few general categories.

There are the passively clueless — those who don't take the time to find out what is going on but speak or act anyway. There are the benignly clueless — those who don't have a clue, but it doesn't matter because they don't do anything anyway. There are the aggressively clueless — those who proudly, repeatedly demonstrate their unwillingness to get information before pontificating. There are the pathologically clueless — those who do not want to understand because demeaning others is the aim of their game. There are the astronomically clueless — those who are very far away from reality, at least as far away as Pluto. Finally, there are the mythologically clueless — those who are not of this universe.

From this etymological exploration, you might think I've been reading some Internet mailing list , such as the one discussing the top-level domain names issue. But it was an article in *Fortune* about computer security that led me to engage in this frustration-lessening exercise.

The article is mistitled "Who's reading your E-mail?" and is mostly about computer security or, more accurately, the lack of computer security. But the security problems that the article explores mostly are not ones of technology failures, but instead are failures of the thought process. The article includes a sidebar that describes a successful tiger team attack (with permission) on the computers and net of a unnamed major company. The company had quite a good firewall on its 'Net connection that thwarted attackers when they attempted to enter by the front door.

Scott Bradner

But as I worried in a previous column (*NW*, Sept. 26, 1996, page 32), the company had rather poor procedures and a poor level of user understanding about security behind the wall. In this case, the tiger team was able to break in by finding a modem-accessible PC running pcAnywhere that was not password-protected. Once the hackers had access to that PC, they used it as a staging area to poke at the rest of the company's computers. They were able to gain access to one of the development workstations by using an account with the user name "guest" and no password. The article also reported there is a 42% success rate in password guessing.

It is very frustrating to hear yet again that large corporations, which should know better, are continuing to refine the meaning of clueless when it comes to user passwords. It is also frustrating to have the Internet take the blame for corporations where the management is mythologically clueless when it comes to the most basic part of security: user passwords.

Disclaimer: Sure, there are clueless people at Harvard, but we don't make it an art form. However, the above is my own etymology exercise.

Bradner is a consultant with Harvard University's Office of Information Technology. He can be reached via the Internet at sob@harvard.edu.

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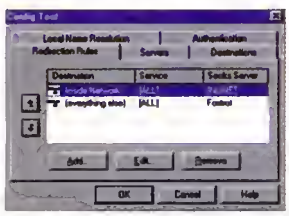
SOCKS: A fresh alternative to the usual firewalls

SOCKS 5.0 shows improvement over SOCKS 4.0 by adding encryption authentication and support for data streaming.

By Ellen Messmer

Say the word "SOCKS," and you probably think of footwear or the Clintons' cat. But if you're looking for a way to control access to and from your intranet or LANs, you should consider SOCKS technology as an alternative to traditional firewalls.

Application-layer firewalls work by letting managers control how users can access standard Internet applications such as telnet, E-mail and File Transfer Protocol, while packet-layer firewalls block all communications at the packet level based on the user's IP address.



Aventail's *AutoSocks is "socksification" software for TCP/IP Windows applications.*

An alternative to these two types of firewalls is a client/server access-control method called SOCKS. Developed by NEC Corp., it works at the session level to let you set up a circuit-level gateway between a user and a host (see graphic).

The advantage to this circuit-based approach, according to SOCKS proponents, is that once the client software is on the user's desktop, you can control nonstandard applications such as Windows without having to check IP addresses. This is valuable because IP addresses change when they are dynamically allocated or shared by a group of users.

"The application has to go through the SOCKS server, where I have to authenticate myself to the server before being allowed to execute the operation," said Evan Kaplan, president and chief executive officer of Seattle-based Aventail Corp., a start-up developing a line of SOCKS products.

While SOCKS is not a direct offspring of the WinSock API, WinSock inventor Martin Hall, chief technology officer of Stardust Technologies, Inc., happens to be a co-founder of Aventail.

SOCKS 5.0 recently became an Internet Engineering Task Force (IETF) standard, so the underlying technology is in the public domain. Aventail has an exclusive agreement with NEC to license the source code to other vendors.

Aventail earlier this month shipped the first SOCKS 5.0 server, Security Manager, with the SOCKS 5.0 client, AutoSocks for Unix and Windows NT, 3.1 and 95. Next month, Aventail plans to add Netscape Communications Corp.'s Secure Sockets Layer encryption method to the server and rename it in the process VPN Server.

The earlier SOCKS 4.0 has been used in Web browsers from both Netscape and Microsoft Corp. Netscape has a SOCKS 4.0-based proxy server, and Lotus Development Corp. has added SOCKS 4.0 to its InterNotes Domino server.

Some firewall vendors, including Digital Equipment Corp., IBM, NEC and Sterling Software, Inc., have added SOCKS 4.0 server functionality to their firewalls as an optional access-control method.

However, SOCKS 4.0 lacks the authentication and encryption features found in the otherwise similar 5.0. "SOCKS 4.0 had no encryption, so the Internet's bad boys could hijack the session," said Michael Zboray, vice president of networking technologies at Stamford, Conn.-based consultancy Gartner Group, Inc.

SOCKS 5.0 has appeal because "if you came up with a new Internet application that wasn't standards-based, you could use SOCKS 5.0," said Zboray, noting that it is fairly easy to use SOCKS to set up a gateway for custom-built, proprietary applications.

New York-based human resources management firm Towers Perrin is in the process of migrating to Windows 95 and giving 6,000 workers access to the Internet. The company decided to go with SOCKS 4.0 when network managers there realized that the company's existing IBM Secure Network Gateway firewall already included SOCKS support.

"Trying to base use of the firewall on IP addresses for 6,000 people would be difficult," said Curt Browne, Towers Perrin's director of technology strategies. "In the course of adding IP to these desktops, we decided we'd use the Dynamic Host Configuration Protocol so we don't have to manage the addresses at each workstation."

Aventail's *Kaplan says "SOCKS 5.0 adds authentication and encryption for all UDP traffic."*

The centrally managed DHCP servers automatically allocate an IP number to a desktop, so the user's IP address is constantly changing.

Towers Perrin last fall offered broad assistance to Aventail as a SOCKS beta user. In return, it convinced Aventail to add some limited authentication to its SOCKS 4.0 client software.

"Authentication is more important to us than encryption," Browne said.

SOCKS 5.0, though, incorporates an IETF standard called General Security Services, which lets security managers plug in a variety of user authentication methods.

These range from the simple password to more advanced authentication systems such as Kerberos; RADIUS; Northern Telecom, Inc.'s Entrust; the European standard dubbed Sesame, developed by Bull HN Information Systems, Inc.; and GTE Corp.'s CyberTrust, which coincidentally became available just this week.

SOCKS 5.0 could also provide a way for corporations to give their external trading partners or salespeople on the road access to resources on their intranet, Zboray noted.

By the end of the month, Aventail plans to ship a 5.0-based package, PartnerVPN, which lets two trading partners set up parameters for accessing each other's networks.

Even though Seattle-based Visio Corp. already maintains a firewall at its site, the company is exploring how it might use PartnerVPN to give its business partners access to Visio databases.

"The fact that SOCKS 5.0 doesn't care about what it's running on means you don't have to set up completely different security scenarios with each of our clients," said Neal Myrick, Visio's IS manager.

"The thing that appeals to me is that it is a circuit-level proxy, and it seems easy to implement in comparison with a lot of standard firewalls. It's a shame SOCKS isn't more widely used," he said.

Aventail is in negotiations with several software and firewall vendors to get SOCKS 5.0 into new products.

Some vendors say it's time to get "SOCKSified." Helius Corp., an Orem, Utah-based start-up founded by former Novell, Inc. employees, has created a SOCKS 5.0-based IPX and IP gateway for controlling Internet access to and from a NetWare LAN.

The Helius software, which can run on an existing NetWare server, provides Internet access via simple landlines or the satellite-based Internet service, DirectPC, offered by Hughes Network Systems, Inc.

Helius developed the software by porting the Unix-based IP Exchange product from Cisco Systems, Inc. to NetWare, which lets as many as 32,000 internal users share one IP address.

Helius President Myron Mosbarger said it costs about $2,000 for a full Helius setup, including a satellite dish, to get started with 10 users.

"With SOCKS 5.0, we can control what the user views, and this is attractive to schools and businesses that don't want employees going all over the 'Net," Mosbarger said.

Even the biggest boosters of SOCKS, such as Aventail, are willing to concede that the technology simply represents one security model, not some magic fix for everything.

Circuit-level proxies such as SOCKS hide the IP address structure of the network to communicate with the proxy server, client machines have to be configured to transmit all TCP/IP data through the circuit-level gateway.

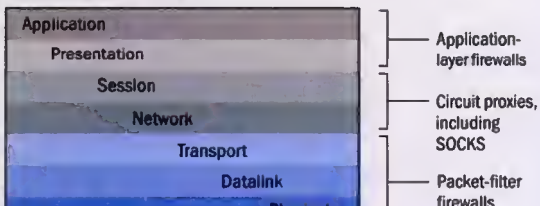
And while circuit-level proxy servers offer flexibility, they lack knowledge of the underlying application protocol so they can't control application-specific information as tightly as an application-level gateway.

Within every organization, network managers have to weigh the pros and cons against the environment they work in to find out if they really need SOCKS. ■

GETTING "SOCKSIFIED"

How SOCKS compares to other firewall technologies.

The seven-layer OSI model



SOCKS technology works at the session layer to authenticate network users, control network access and encrypt traffic.

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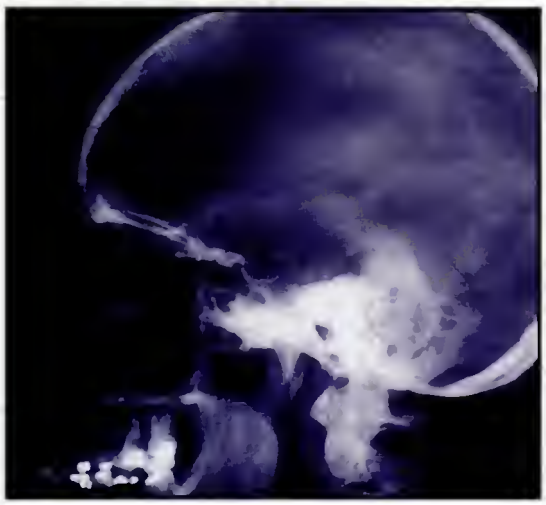

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Ron Nutter, a Master Certified Novell Engineer and Groupware CNE in the Lexington, Ky., area, tracks down the answers to your questions. Call (800) 622-1108, Ext. 476, or send your questions to rnutter@world.std.com.

I have an IBM Model 80 Micro Channel file server with 14M bytes of RAM. It runs NetWare 3.11 and has two Ethernet cards.

In addition, I have an Adaptec, Inc. 1640 SCSI board installed but cannot get the driver to load from the server console. The board is installed in CMOS setup, and is not using any interrupt or I/O in conflict with other cards.

Here's the load statement: LOAD C:\AHA1640.DSK SLOT=5, and the error is: "ERR 117: Unable to initialize host adapter's mailbox location, module initialization failed, module AHA1640.DSK not loaded." Neither Adaptec nor Novell have been able to tell me what "mailbox location" means or provide much help.

J.B. Mercer, systems engineer, DataNet, Inc.

I have been able to resolve similar problems with the help of additional information that appears when you're in the server configuration program's advanced mode.

So get the latest configuration program from IBM's Web site (www.ibm.com). When you call up the program, press CTRL-A to get to the advanced part of the configuration.

I've found that SCSI controllers for IBM Personal System/2 models like to set up at Interrupt 14 or 15, so try moving the controller to a different interrupt. You also may want to try a Mylex Corp. BusLogic controller. I have been able to get this controller to work when I've had problems with the Adaptec controller.

It might be worth a trip to Adaptec's Web site (www.adaptec.com) to download NW31X.EXE. This will give you the latest drivers for the controllers and, more importantly, the latest ASPITRAN.DSK. It can't hurt to get the latest driver release.

You also should try moving the SCSI controllers to different slots. This will help determine if you have a motherboard problem.

Working out a smooth migration for SNA-to-frame relay networks

By Lori Dreher

After several years of industry discussion and attempts by IBM to convince its installed base to migrate from legacy SNA networks to frame relay, it appears many companies at last are ready to make the move.

The ability to successfully carry SNA traffic over a frame relay network is partly a function of network design (for example, the assignment of SNA and LAN traffic to separate permanent virtual circuits and appropriate sizing of ports and PVCs) and partly a function of the network equipment being used.

One of the big challenges is network response time — a critical but rather subjective issue. A perfectly acceptable response time to a user of one application may be completely unacceptable to a user of a different application. In servicing SNA users and applications, the network will be expected to provide acceptable levels of service across the board.

In a frame relay network, the response time experienced by a user of any PVC is dictated by several factors:

- Equipment transit delays within the customer premises equipment (CPE) and in each switch. These delays are predictable, but will vary according to the load on the net and within the switch. They also can be influenced by PVC prioritization schemes implemented within the switch, where frames on certain PVCs are given preferential treatment during processing.
- The number of hops between the two communicating SNA end systems. Assuming direct connection to the network at the host and CPE sites, the hop count reflects the number of trunks the PVC must traverse within the network.
- Application-related issues. Higher layer protocol events at the CPE or host site may change the response time experienced by the user. Additionally, heavy processor loading, especially at the host, may lengthen the response time. In these cases, improved response times are probably beyond the control of the network.
- Media transmission delays. These are a function of the physical bandwidth terminated at each hop through the network.

A variety of industry-standard or value-added features and capabilities can be used to design networks that deliver response times and service levels aimed at converged SNA and multiprotocol nets. For example, fault-tolerant networking can be provided in some cases via the switched network's internal routing algorithm, which may support fast error detection and dynamic rerouting of PVCs quickly enough that the user session is not disrupted. The routing algorithm, combined with a hardware redundancy scheme, will ensure the requirements of reliability and availability are met.

In addition, each PVC can be assigned a priority to ensure that latency-sensitive traffic, such as that in SNA terminal sessions, is identified as it enters the frame relay network and is given priority over all other traffic across the network.

Design metrics that let network managers or service providers exercise control over the specific path a virtual circuit will take through the network also are important in a shared network environment. For example, SNA traffic can be routed to fast and high-quality trunks that are not shared with other traffic.

Use of 45M bit/sec frame relay also is often warranted in SNA environments. These frame relay links provide the high-speed access to a data center or corporate headquarters that many SNA networks need, without requiring the use of multiple physical ports.

Network management

A number of features are also available to support the stringent network management, operations and monitoring required for mission-critical applications such as SNA. Statistics may be gathered and used to provide specific, measurable information about quality of service (QoS).

The type of QoS information gathered may include configuration data, information on lost frames, and the minimum, maximum and average round-trip delay through the network. The particular components tracked may include circuits, ports and PVCs.

SNA users probably also will find the Customer Network Management (CNM) feature defined by the Frame Relay Forum helpful. CNM lets network managers or service providers give users the ability to access information about the performance and characteristics of their networks.

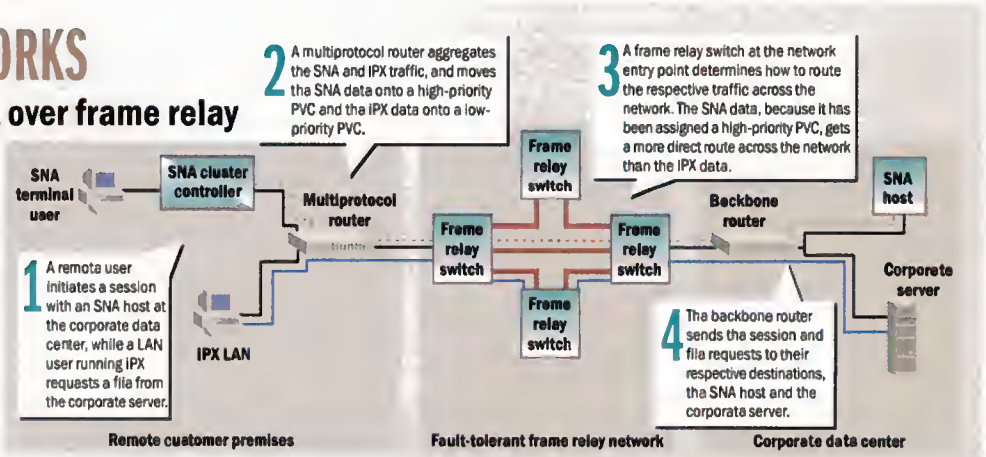
To ensure the anticipated business and technical benefits associated with the migration of SNA-to-frame relay networks, network managers and public network service providers must understand and take steps to address the specific concerns and challenges associated with supporting mission-critical applications typical of an SNA environment.

Dreher is product marketing manager at Cascade Communications Corp., a frame relay switch vendor in Westford, Mass. She can be reached by phone at (508) 952-1256 or via E-mail at ldreher@casc.com. *Portions of this story were reprinted with permission from the Wescon conference in Anaheim, Calif., on October 22, 1996.*

HOW IT WORKS

Boosting SNA over frame relay

A number of features, such as prioritization of permanent virtual circuits (PVC), fault-tolerant switching and high-speed access links, can ensure that latency-sensitive SNA data is effectively carried over a frame relay network.



EDITORIAL *insights*

Go for it already!

A week from tomorrow, AT&T Chairman and CEO Robert Allen will take the podium at the National Press Club in Washington, D.C. His topic: Telecom reform, one year later.

Allen last spoke in Washington a year ago — the day President Clinton signed the telecom reform bill. At the time, Allen said AT&T would enter local markets in all 50 states as early as the following summer. Today? AT&T offers residential local service on a resale basis in one city: Sacramento, Calif. AT&T business local exchange service? It's nowhere to be found.

Allen's speech next week will provide a good barometer of whether AT&T will be able to improve on this record. Let's see how much time Allen spends laying out AT&T's plans to take control of its destiny by creating its own local facilities, and how much time he spends castigating entrenched local carriers for fouling up telecom reform. Any guesses?

Yes, I know. GTE and the regional Bell operating companies are evil monopolies bent on blocking competitors. And the courts are holding up the Federal Communications Commission's interconnection rules.

But no one — not the RBOCs, not the government — will hand AT&T the local exchange on a silver platter. Yes, the law gives AT&T the right to enter the local market via resale. But how much this benefits corporate users is highly questionable. Research indicates that user interest in end-to-end telephony from a single carrier collapses when some of the links are provided on a resale basis — and for good reason (see story, page 1).

There's another path. After years of talk, MCI is finally building out its local facilities to the point where RBOCs are sitting up and taking notice. As Tim Stevens, director of advanced access services for Bell Atlantic, recently told me: "When you see 'MCI' on the manhole covers, you know they've arrived."

Real local competition requires an investment. MFS Communications spent millions building local networks without turning a profit. But now that it's been bought by WorldCom, Inc., it has a chance to beat AT&T to the end-to-end punch. MCI will spend $700 million this year on local buildouts. AT&T's dollar commitment to its local business? Well, that's a mystery.

AT&T's endless legal whining despite fat state-approved resale discounts is a convenient mask for the fact that, so far, it's been unwilling to take any risks. That's as big a reason for the stalemate in telecom reform as anything else. Users need evidence that AT&T is willing to go for it in the local loop. If it waits too long, other options may appear more enticing.

David Rohde, senior editor drohde@nww.com

The Internet • Wayne Spivak

Defending spam, plus survival tips for a spam-filled world

The closing moments of "Monty Python's Flying Circus" bit on Spam find us listening to Vikings singing "Spam, Spam, Spam, Spam. Lovely Spam! Wonderful Spam!"

I agree. Spam is not inherently a bad thing, though it's often portrayed that way (Jan. 13, page 1). It currently suffers from two major problems: the nonexistence of an acceptable-use policy and the lack of a surefire way for Internet users to remove themselves from mailing lists.

Before you fill up my mailbox with angry retorts, let's look at this phenomenon from a business standpoint. Die-hard, true-blue spam haters define spam as unsolicited E-mail — period. The majority of Internet users define spam as unsolicited E-mail sent to a large number of people, or posted messages to several newsgroups that are unrelated to the stated purpose of said newsgroups.

Now, if I were a lawyer defending my client, I would claim that all these definitions are too broad to be accurate. Unsolicited E-mail could be considered, in the broadest sense, E-mail from anyone you did not expect to hear from. In a more narrow view, spam can be considered E-mail from companies with the sole mission of filling up your mailbox with junk E-mail.

As a businessperson, I need to market my wares in order to make money. I can advertise in magazines (or on Web sites) or have my telemarketer call you (or send a fax, although that is now illegal in some states). I can also utilize the time-honored mass mailing — either via the U.S. Postal Service or the Internet.

What do you do with all the junk mail you receive? I throw it out. With junk E-mail, I hit the lovely delete key. Presto, no more spam — I mean, unsolicited E-mail.

Those with neither the time nor the inclination to hit the delete key may wonder what their options are. A good place to start is SPAMAD, a new mailing list that acts as a forum for discussing the problem of unsolicited advertising via E-mail and on Usenet, as well as potential solutions. It is unmoderated, but it manages to stay on topic. To subscribe, send E-mail to listserv@internet.com, and in the body, type "subscribe SPAMAD."

One of the more realistic suggestions proposed via SPAMAD advises spam recipients to send the entire post, including full headers, to four places: the poster's address, the poster's postmaster, the National Fraud Information Center (http://www.fraud.org) and the Federal Trade Commission (http://www.ftc.gov/index.htm).

Another suggestion involves creating an accreditation process that rewards Internet service providers that take an active stance against spam mongers by allowing such ISPs to display an icon on their home pages similar to the blue ribbon denoting freedom of speech online.

Still another suggestion advocates E-mail programs that allow filtering. One example is the ListWasher by Peter Hartley (http://www.hartley.on.ca/). Marketers use this program to "wash out" domains that don't want solicitations, as well as addresses registered with Hartley's cancelbot. With ListWasher, users can remove themselves from — or add themselves to — mailing lists.

Unfortunately, sending E-mail to cancelbots and to many spam originators doesn't always work. Many spam mongers use fictitious domain names or don't follow RFC specifications. And even if you do succeed in sending a "Don't spam" message, it may not stop the spammer. . .yet. But in time, when this new venue matures, so will compliance with acceptable use.

In any event, while unsolicited E-mail can be exasperating, time-consuming and, for some, expensive, I'm still for it. This country is built on the premise of free enterprise, and the new Internet — the commercial Internet — is also built on that premise. So let's call spam free enterprise, set up equitable rules, enforce these rules and move on to more important topics — like making money.

*Spivak is president and owner of SBA * Consulting, an IT consulting firm, and SBA.NET.WEB, an Internet consulting company. He can be reached via the Internet at wspivak@sbanetweb.com.*

MESSAGE QUEUE

Send letters to nwnews@nww.com or John Gallant, editor in chief, Network World, 161 Worcester Road, Framingham, MA 01701. Please include phone number and address for verification.

Microsoft should talk

Your story "Sun reaffirms Java control" (Dec. 16, 1996, page 1) quotes Brad Chase, vice president for marketing at Microsoft Corp.'s Internet client and collaboration division, as saying, "If you really want to make Java 100% pure and have it be an open language, then put it into a standards committee."

It's pretty cheeky of anyone from Microsoft to take a shot at another vendor about open standards, considering the indifference Microsoft has so often shown toward both openness and standards.

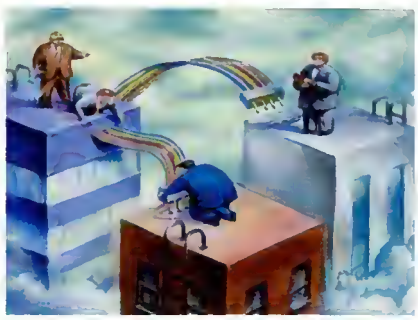
"Open" has a singular meaning in the Microsoft glossary: If Microsoft published

Turning intranets into strategic marketing weapons

People have a tendency to take a new development, compare it to an older one and pronounce them equal. Michael Jordan? A Dr. J clone. The network computer? A brain-dead IBM 3270. Intranets? No big deal — large companies have been using intraenterprise networks for years.

The initial cynicism that intranets are just the same wine in a new bottle has to give way to a new reality: This intranet hoopla is not just a scheme for getting unwitting companies to pay more for the same functionality they have been using for years. Rather, intranets really are a significantly better mousetrap.

Why? Mainly because in the future we will combine internal databases with external information and simulation models to build new products.



Every company in America is deathly afraid that its mainstay products will become commodities and be undercut by competitors. Every company hopes that the added value it puts into its products gains it a price premium.

But what few companies realize is they don't have to invest so much in R&D. By leveraging their internal databases and models over the Internet, and judiciously using intranets, companies can accomplish the same thing. In short, a company can differentiate itself by externalizing its internal system.

A couple of examples: The network that allows you to track your package was once Federal Express Corp.'s internal system; the solution that allows architects to build elevator subsystems was once Otis Elevator Co.'s internal CAD system.

For the past 20 years, every middle-aged, slightly balding seminar speaker — including yours truly — has pontificated that the internal data processing strategy should dovetail with the corporate strategy. But what precious few of us understood was those internal systems, on steroids, would become the systems we would market. Today's intranet usage is evolutionary, and all we are really doing is mimicking the Internet, mainly publishing documents for internal information dissemination. It's the data behind the data that has value.

A few weeks ago, for example, I was having dinner with the chief information officers of all the regional Bell operating companies — a small group, but one which purchases about $4 billion in information technology hardware and software per year. The usual gripes came up ("We need more money." "We want fewer platforms." "We can't find enough C++ programmers.").

But then I heard something interesting. One of the CIOs started talking about the data his organization has on its top accounts — where their wires are connected beneath the streets, what the logical and physical configurations look like, which risers are approaching saturation and which central offices serve which areas. This is information that many customers would die for, and that would keep them from switching to another carrier or service provider.

Communications networks are about getting the right information to the right people at the right price at the right time. Every RBOC has a model for configuring networks. Customers do not simply want the information; they want the model.

In the future world where I would like to live, companies would retain clients not because they charge less, but because they were willing to trade software for loyalty. In this world, I would stay with Cisco Systems, Inc., 3Com Corp., or IBM because they give me access to configuration tools or simulation software that allows me to manage my networks in real time. I would stay with Aetna Life Insurance Co. because it gives my human resources department access to its smorgasbord of benefits software. I would buy from Staples, Inc. because it has a software model that charges me only for the supplies I use and bills me via the Internet.

All of this would be virtually impossible without Internet technology overlaid on intranets. Today, there are several drawbacks to the Internet that may cause companies to use semiprivate, virtual private or totally private intranets. Sure, lack of security and managed bandwidth allocation are problems. But in the long run, a unified physical network where I can control my internal systems and externalize them to customers will outweigh the benefits of the old-style internal networks, which were more secure but were islands. In short, I give up something but I gain more.

In the end, we really have no idea which of our internal databases and models we will externalize, which we have to semi-protect and which we have to fully protect. But what the Internet does is combine a worldwide mesh of TCP/IP solutions into a hybrid supernetwork. If, as a user, I am smart enough to leverage what's happening outside (on the Internet) with what I have spent millions developing inside (my own applications), I can make my systems do double duty — serve my internal users and woo my external customers.

Anderson is managing director of The Yankee Group, a Boston-based consultancy. He can be reached at (617) 956-5000 or via the Internet at handerson@yankeegroup.com.

it, it's a standard and it's open. When viewed in light of Microsoft's "let's extend Java to support only our platforms" initiative and handpicking of an "open standards committee" for ActiveX, statements such as Chase's appear clearly for what they are: marketing "bushwa."
Douglas Franklin
Atlanta

High on Fibre Channel

Your article on the power struggle between Gigabit Ethernet and ATM (Dec. 23/Dec. 30, 1996, page 66) points out three ATM weaknesses: It is too complex, not backward-compatible and lacks pure bandwidth capacity. The article also describes three Gigabit Ethernet weaknesses: We're a long way from a standard, it lacks provisions for end-to-end flow control, and it fails to ensure quality of service. While providing a valuable comparison, you omitted a solution that is available today and overcomes all of these issues: Fibre Channel.

Though admittedly not a mainstream technology, Fibre Channel has proven its mettle in mission-critical LAN installations and has the backing of an international standards body. Because it provides end-to-end flow control, quality of service, compatibility, simplicity and pure bandwidth, Fibre Channel is handling the toughest network jobs. Some of these jobs, such as simultaneous delivery of uncompressed video, voice and data, may never be accomplished by ATM and Gigabit Ethernet.

Please consider exploring not only the mystical promises of future technologies, but also solutions and standards readers can buy today.
Stephen O'Hara
President and CEO
Ancor Communications, Inc.
Minnetonka, Minn.

Secure Windows

I enjoy Dave Kearns' "Wired Windows" column immensely. Concerning his latest column on NT security (Jan. 6, page 22), I found the NTSEC mailing list (delivered via Internet E-mail) to be very informative and useful. The syntax to subscribe is: subscribe ntsecurity <UserName>@<DomainName>.

I also discovered that Tom Sheldon's new book *NT Security Handbook* contains a wealth of information on this subject.
Christopher Waters
Systems engineer
SBM Computers & Communications Corp.
Easton, Pa.

800 service ceases

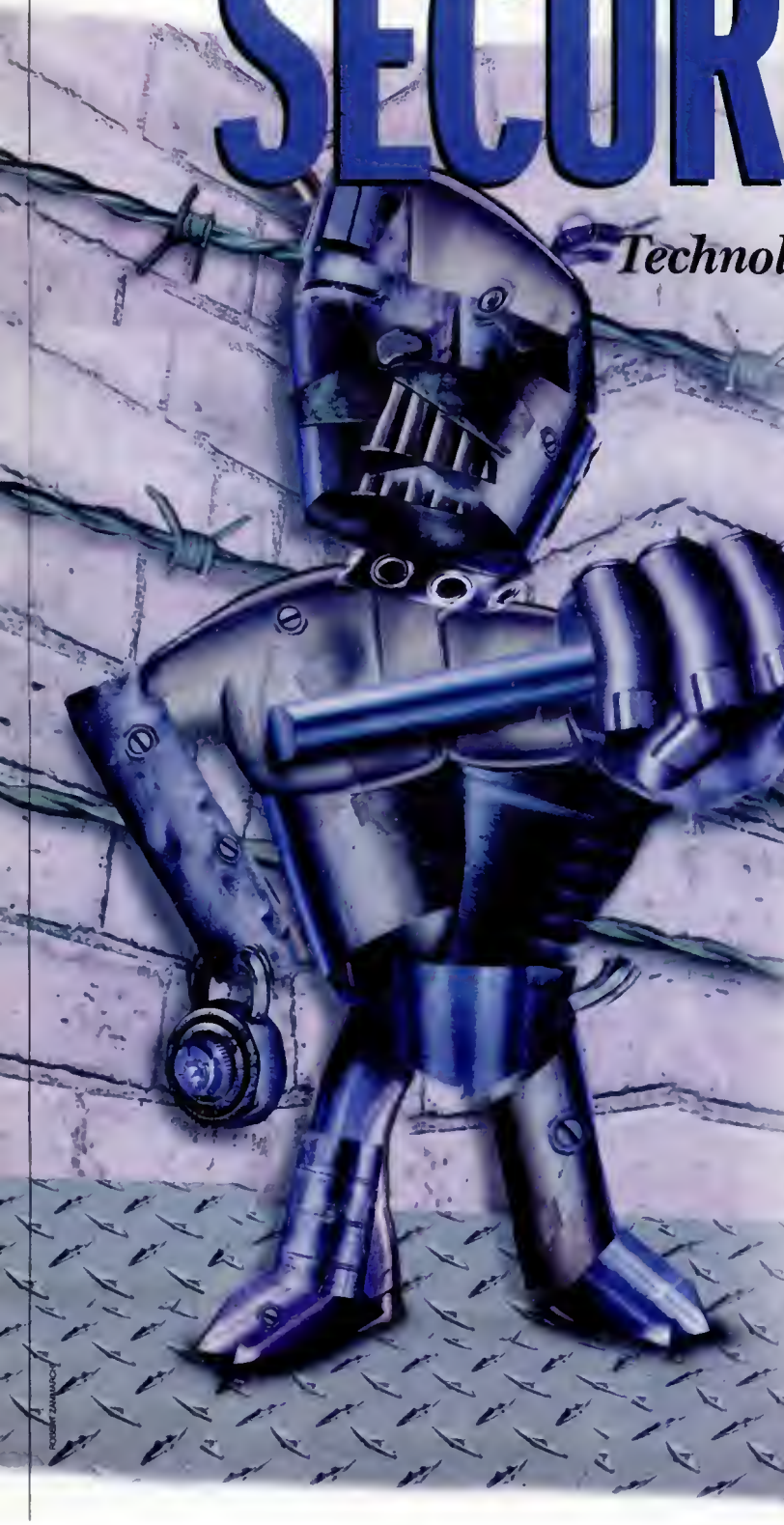
Your article on Juno Online Services stated that users can retrieve their E-mail by dialing an 800 or local phone number (Jan. 6, page 25). Readers should be aware that Juno is dropping its 800 service. Although many subscribers can still reach Juno through a local number, many will now have to use a long-distance number to access E-mail from home. Still, it is cheaper than paying $19.95 a month and long-distance charges.
Michael Lester
MIS coordinator
Baja Marine Corp.
Bucyrus, Ohio

Teletoons

Special Section

SECURING THE

Technology alone won't make you safe.



By Winn Schwartau

Security is no longer just about security. Today, security is about resource and information management, and it turns out that good security is a byproduct of a well-run organization.

The corporate enterprise network is constantly changing; in three years it will be different from today, and in five years it will have changed some more. Thus, whatever plans we make today for enterprise management and security must be able to accommodate an unknown topological future. On top of that, the typical large-scale enterprise network is geographically far-flung, physically heterogeneous and logically as complex as a London street map. In short, technical chaos.

So what's the slightly paranoid, overburdened, downsized, modern, information-rich, systems-reliant organization to do? For those of you waiting and longing for a magic security pill or the Holy Grail of Security, quit holding your breath. Technology is not the first place to spend money or allot resources; it is not *the* answer. As Stephen Katz, chief information security officer for Citibank, N.A., says, "Get rid of the techno-babble. This is a management problem."

Who's the boss?

Dr. Eugene Schultz, information security program manager at the consultancy SRI International, Inc. in Menlo Park, Calif., says, "Get a high-level policy in place. You gotta do that first." Set your enterprise network security goals at the highest level of your organization — the president or the board of directors. A mere vice president of information technology will not do. Unless the real leadership sets the vision and is willing to allocate resources to adequately secure and manage your information infrastructure, not much will get done.

Policy goals are up to you. You might choose to prepare your enterprise networks to be resilient against hurricanes, floods and computer viruses, but not worry about hackers. Whatever policy and goals you choose, make sure they are unambiguously clear and that everyone in your organization is made aware of them.

Opening Pandora's box

Next, you must find out what comprises your enterprise network. Carl Allen, president of Infocore, Inc., a Highland, Utah-based consultancy, says, "Someone has to know what you've got — your network schematics, points of access, vulnerability — and who's in charge."

At the same time, an information asset evaluation should be performed. What information resources are important enough to be protected, and where are they located? Stephen Cobb, director of special projects at the National Computer Security Association (NCSA), notes that "the evaluation process helps determine the relative value of data to a company. It raises awareness and makes people think."

Top-to-bottom employee education and security management cooperation should go without saying, but so many firms miss this. You need to have the cooperation of the security staff,

INSIDE:

ENTERPRISE

Tackle it as a management problem.

throughout the entire enterprise, as well as the support, understanding and compliance of end users. An ongoing education process for the entire staff should be tailored to meet the needs of each group or department. "[Otherwise] security will be bypassed, turned off or ignored. And that's worse than having no security at all," Citibank's Katz says.

Technical enterprise security

So you've got your policy, you know what your enterprise network looks like, and you've got everyone onboard and cooperating. How do you actually implement a security plan and make it all work together seamlessly? How do you keep from interfering with the user every time he wants to do something?

There are several approaches one can take, and they all rest on the foundation of a security architecture. Keep in mind, there is no perfect solution; no one vendor will meet all of your needs exactly, everywhere throughout your organization, but many may come close.

Multilevel security (MLS) is one choice the government has been exploring for years. The premise of MLS is that some data can only be viewed by people who have appropriate security clearance. In the Read Down/Write Up MLS policy, each document is labeled according to its sensitivity and the security clearance of the person who created it. So someone with a lower security clearance can write up to Secret or Top Secret, but not down to Unclassified. Similarly, the person with Secret clearance can read secret, confidential and unclassified documents, but not Top Secret.

Another approach to MLS, used in products such as NetLock — from the Hughes Electronics Corp. unit with the same name — is cryptographic isolation. In this case, all documents are encrypted once they leave the workstation for either transmission or storage. The trick is that each security level uses a different encryption algorithm and/or encryption key. Therefore, only Secret keys can open Secret documents using a Secret algorithm. But the infrastructure for managing all these keys requires extra levels of protection as it becomes the single point of failure in the chain. Complexity reigns.

Such systems can be cumbersome, expensive, difficult to manage and subject to rapid obsolescence. It takes so long to validate the system works that by the time approval is given, the software and system are a generation or two old. As Don Sortor, a security specialist with a large multinational firm says, "MLS? It's gone. Who cares about it?"

Maybe not even the government anymore. It is slowly migrating to new models of information assurance, detection and response because MLS proved to be too expensive and restrictive.

Centralized security

Most companies find themselves with a decentralized security infrastructure, which can also be taken to mean disorganized and capricious. For example, security often falls under the title of ownership, which might be assigned on the basis of physical location — all New York security and network management is controlled by Bill. Or it might be on the basis of legacy-based applications — all transaction processing is under Sue's management. Or ownership might be based on function — all communications links are run by Bob.

Since the end of the 1980s, companies have been searching for a better technical solution, and it might be finally arriving. Vendors of enterprise security products are coming to the realization that the real problem is enterprise network management.

One of the favored technological approaches for dealing with distributed enterprise networks is a centralized management scheme that includes a security server. To see how centralized security works, let's pretend your entire organization is connected just the way you want it. Everyone can talk to everyone they need to; the communications links work, the routers and bridges route and bridge as advertised. Remote dial-up works from anywhere on the planet; TCP/IP, SNA and NETBEUI are all happy, interconnected campers.

Now let's add security.

From an enterprise security view, we need several crucial elements that ideally make our network both manageable and reasonably secure. None of these individually are magic security pills, but taken together, in the right dosages, they can cure many of our ills.

1. First is the ability of authorized managers to add, change, or delete users across a wide range of platforms, operating systems and applications. Also known as single point of registration (SPR), this allows a security manager to add a new user to a centralized database. Think of the X.500 model here and then add resource attributes. So User A or User Group Z will be assigned passwords, user IDs, access rights to applications, and resources as determined by job function, seniority or need.

This single-point security management step consolidates the efforts of a dozen or more people, who might or might not have the time to add Henry to the RACF database. The SPR takes care of it all. Now this is not a quick fix; there is pain in reaching this euphoric technical aerie. Especially in a large organization, picking a particular platform to begin implementation might make good sense. Axent Technologies, Inc., for example, advocates conquering one technical domain (or operating environment) at a time rather than engaging in an all-out technical assault. Its centralized OmniGuard products are designed for Unix, Netscape Navigator, NetWare and Windows NT.

2. Whether for a single set of platforms or the heterogeneous maelstrom of your networks, another highly desirable function is single sign-on, or SSO.

With 10 to 20 passwords and user IDs for as many resources and applications, security breaks down because the user wants to do his job, not just keep track of passwords. So he writes them down. SSO allows the user to authenticate himself at his client machine, using a range of techniques (see story, page 48). Then he is automatically authenticated to any subsequent application or resource he may choose. It's clean and neat but has its own set of problems (see story, page 48).

"Automatic authentication between nodes and resources is essential because today there is no such thing as 'my network' and 'their network,' " Infocore's Allen says. "If you are networked, you are networked." Unisys Corp., for one, offers a suite of single-point security products for the client/server environment.

3. The well-managed enterprise security server should present a functionally transparent view of the user's universe because it's critical to his job performance. Regardless of which client operating system is in use (Windows 3.X, NT and 95, Unix and Macintosh), the graphical representation of his access to applica-

SECURITY SANS TECHNOLOGY

Here are some very simple actions that can radically improve the security of your enterprise networks, without filling the coffers of security vendors.

- Better personnel security, especially for the lowest paid people on your staff, such as cleaning staff and guards.
- Legal, noninvasive background checks on potential employees can help avoid future problems.
- When hiring, provide new staff with written security policies and require acknowledgement of their terms in writing.
- Modify all of your sign-on screens to reflect your security policies, a suggestion the Department of Justice strongly recommends.
- Enhance physical security with document shredders and/or burn bags.
- For truly networked companies that want to minimize theft and computer viruses, disable the floppy drives throughout your organization.
- Develop employee rights such as a public postings area, E-mail privacy, approved games and so on. Turn your staff into security allies, not adversaries.

tions, systems and resources should reflect the underlying and invisible security concerns. Simply put: If the user is not meant to have access to some distant set of selected resources, then don't put them on the screen.

Richard Gill, director of channel marketing for ICL North America, advocates the central server approach for different reasons. This approach means "the user will not have to go through periodic, costly retraining every time there is a technical reorganization or IT makes other network changes," he says. The user's view is consistent, the security server information is updated, and, as far as the user is concerned, the same icon gets him to where he wanted to go anyway — invisibly.

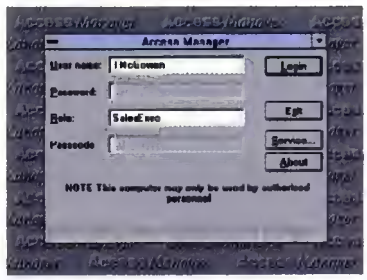
ICL's Access Manager was the first commercial product to present a homogeneous view to the user of a complex global network's resources and applications.

Now there are many different techniques to achieve this, and vendors — including Computer Associates International, Inc. with its Unicenter suite — will be more than happy to tell you why their approach is the best. But there is no standard vocabulary among vendors yet, so be careful to make sure you understand exactly what the vendor is promising.

4. Our ideal enterprise security system will also want to be able to detect certain behavior that is deemed inappropriate, both from the inside and the outside. Intrusion detection is getting a lot of press these days because of the Internet. But don't be fooled. Dan Woolley, vice president of business development for security vendor Memco Software, Inc., warns, "Insiders are still the biggest threat to our systems, and some 50% of computer crimes still occur from current or ex-employees." Has a user repeatedly tried to access one resource using a series of unknown passwords within a short period of time? Has someone tried to log on to three different terminals or clients on three different continents at the same time?

Internet Security Systems, Inc. in Atlanta offers tools to test your perimeter security, and WheelGroup Corp. of San Antonio, Texas, has developed response tools for attempted intrusions. More security concerns are going to be response-oriented as opposed to merely building a high wall.

Intrusion detection systems are getting smarter, and you may hear some fancy words to describe them. Some claim fuzzy logic, which is better left to elevator and washing machine controls. Others claim artificial intelligence agents, but they have never really panned out. I prefer the term "heuristic" to describe a self-learning system, which changes the rules gradually over time. "Parameterization" means you choose a set of out-of-bounds guidelines where the system reacts in some manner. But if a thousand people act the same out-of-bounds way every day, the out-of-bounds conditions will change to reflect the actual behavior of the system. PRC, a McLean, Va.-based systems integrator, and Hughes Aircraft Co. have been looking at various approaches under the correct premise that intrusion detection should be dynamic not static.



ICL's Access Manager *masks complexity by giving the user a single password to myriad computing resources.*

5. A security system that can react automatically to problem situations is critical, but such products are in their infancy. Some reactions may be fairly benign, such as merely sending a notice to the console or security manager screen. Others trigger E-mail. Some of the better reaction mechanisms may choose to run a predefined process. Unless the reaction to the intrusion actually accomplishes something, such as halting the attack or identifying the offender, it's pretty useless.

We're awaiting further developments in this area, but in the meantime, make sure you emphasize to your security vendors that this is high on your list.

All of these concerns are grounded in security basics. Memco's Woolley says, "Simplify the risks and then adapt to the real needs you have identified. Enterprise security comes down to perimeter defense, transmission defense, data/systems integrity, and administrative audit, alarm and response."

"Such systems offer more than security," ICL's Gill says. "Real cash can be saved [through] operational efficiencies, simplified online systems administration, less functional overlap and redundancies, and lower help desk costs. They all add up to a justification for investment in enterprise network security."

Security specialist Sortor maintains that "you have to pick the number of technical security pieces to implement based upon your real needs. Do you need Kerberos? Do you need crypto everywhere? How strong does your authentication need to be?" Perform a risk analysis to identify the problem areas, then select technologies to solve those problems. Stephen Cobb sums it up: "Concentrate on the vulnerabilities and the access points."

Making it all work

Given that there is no magic pill that will solve your enterprise security prob-

See Security, page 46

Security goes symmetrical

Until now, you've had it fairly easy, in terms of security, but the dawning of the Internet/intranet era means old models go out the window.

In the mainframe era, tens of thousands of dumb and dumber terminals were connected to computers the size of Oz with the agility of the Scarecrow on Valium. But security was easy. Like the Yellow Brick Road, all we Munchkins had to do was protect the access roads to the Emerald City of our information repositories.

But then along came the PC and the LAN. Offline processing compounded the security problems. Data was moving down a two-way street from the mainframe to the LAN server and to thousands of clients farther down the road.

How did we secure that mess? By and large, we didn't bother because the vast majority of users were physically internal to the organization, and remote computing, which would multiply the threat, wasn't there yet.

But now we add the Internet, intranets and giant remote servers buried in missile silos in the Gobi desert. We invite the good guys into our networks to conduct business, yet we seek to shun unwanted intruders who navigate the same electronic highways.

Security today must be symmetrical to be effective: All of the unidirectional security models we have been using for more than two decades must now be rethought to perform in a multidimensional cloverleaf of two-way traffic. So let's examine some of the symmetrical aspects of security that we must address in a way that won't totally restrict our activities. You have more than one kind of employee, each of which has different access control needs, and your business associates also have their own needs.

You have to decide how users may access particular resources either inside the organization or outside of it. Your view of the network becomes increasingly important as the definition of an enterprise network evolves, and virtual private networks take on new meaning. One way or another, we are all tied together, and we must properly manage our interconnections.

Two critical security basics are at work here:

- Proper user identification and authentication. Unless you really know who you are dealing with, you have little real control over the environment (see story, page 48).
- Enforcing access control rules in a symmetrical fashion that reflects corporate policy and takes into account who is seeking access.

The following chart provides a good starting point for understanding the symmetrical realities of enterprise security and management. You can choose the options that best suit your needs.

— Winn Schwartau

SYMMETRICAL SECURITY — A CHECKLIST OF OPTIONS TO CHOOSE FROM

Users	Internal resources	Internet access	Upload	Download	E-mail
Internet employees	• Restrict access by need • Cryptography - Who gets it? • Floppy disk - Required? • Hard drive access from workstation only?	• Restrict access by IP address	• Any company information • Restrict by IP address • Restrict by content	• Anything • Nothing • Restrict by IP address • Restrict by content	• Content-based (in and out) • Restrict by IP address (to and from)
External employees (other company locations)	• Remote authentication prior to access	• Restrict access by IP address	• Any company information • Restrict by IP address • Restrict by content	• Anything • Nothing • Restrict by IP address • Restrict by content	• Content-based (in and out) • Restrict by IP address (to and from)
Telecommuters	• Remote ID • Limited access	• Restrict access by IP address from company IP/ISP	• Any company information • Restrict by IP address • Restrict by content	• Anything • Nothing • Restrict by IP address • Restrict by content	• Content-based (in and out) • Restrict by IP address (to and from)
Vendors, business partners and customers	• Access only to vendor, partner or customer areas	NA	• Anything • Nothing • Filtered	• Anything • Nothing • Filtered	• Content-based (in and out) • Restrict by IP address (to and from)
Prospective customers	• Open to anyone: Intranet isolation • No ID required	NA	• Anything • Nothing • Filtered	• Anything • Nothing • Filtered	• Content-based (in and out) • Restrict by IP address (to and from)

NA = Not applicable

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Security

Continued from page 44

lems and no single vendor to meet all your needs, you have some integration ahead of you. Your solution will not be cheap, but the payoff of enhanced enterprise management and asset protection is a worthy goal.

There will be growing pains, so take some advice from Woolley, who's been there: "Whatever you do, start small. Pilot it first." Build a pilot that, once working can be easily scaled in size, complexity and distance. Start with one or, at most, two platforms and get the feel of how the system works. Ask your vendor for 30-, 60- or 90-day trials, and be prepared to pay for consultation services for initial training.

And remember, technology is not always the answer. One of my financial clients was worried about connecting to the Internet. We quickly determined the major cause for concern was the human resources department; if it was online, sensitive information may be compromised. The company expected a technology solution, maybe an intranet firewall, so the rest of the company could connect to the 'Net.

In a matter of minutes, we determined that out of more than 5,000 employees, only six needed access to the human resources computers, and those same six needed only basic Internet access for corporate E-mail. We gave them a quick, inexpensive and effective solution: an air gap. Disconnect the human resources computers from the company network and the Internet. Give all six of them an extra, low-end PC (which were lying around unused) to access company E-mail. It cost one-hundredth of what the company wanted to do technically, and management headaches were reduced to zero.

Sometimes technology ain't all it's cracked up to be.

Schwartau is president of Interpact, Inc., an international security consulting company based in Seminole, Fla. He can be reached at winn@infowar.com or http://www.infowar.com.

THE SECURITY PLAYERS

Here is a sampling of security vendors, broken down by product. We've also built links from Network World Fusion (www.nwfusion.com) to all the vendors that have Web sites with product details. Enter the number below in the DocFinder box on the home page.

FIND IT ON FUSION 0420

SINGLE SIGN-ON AND SINGLE POINT OF REGISTRATION

Company	Product	Phone
Axent Technologies	Omniguard family	(301) 258-5043
CyberSafe	CyberSafe Challenger	(206) 391-6000
Computer Associates	CA-Unicenter	(516) 342-5224
CKS North America	CKS MyNet	(800) 321-9004
Cygnus Support	Kerb*Net	(415) 903-1400
LJK Software	LJK/Login	(617) 558-3278
IBM	Secure Single Sign-On	(800) 426-3333
International Computers	AccessManager	(703) 648-3300
Millennium Computer	First Step Single Sign-On	(716) 248-0510
Memco Software	SeOS Loginworks	(800) 862-2602
Mergent International	Logon Guard and SSO/DACS	(860) 257-4223
New Dimension Software	Multi-Platform CONTROL-SA	(714) 757-4300
Proginet	SecurePass	(516) 248-2000

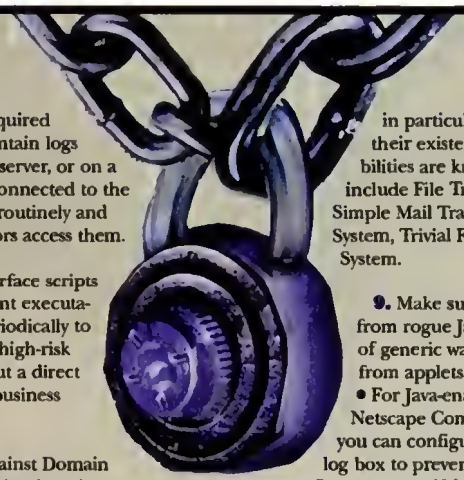
IDENTIFICATION AND AUTHENTICATION

Baseline Software	Password Coach	(415) 332-7763
Security Dynamics	SecurID time-synchronized card	(617) 687-7000
Secure Computing	Softtoken ID systems and firewalls	(612) 628-2700
Smart Disk Security	Smart Disk family	(941) 263-3475
EyeDentify	Model 2001 retnal recognition device	(504) 927-4290
LeeMah Data	Remote eccess security and diskette-based ID	(510) 786-0790
AssureNet Pathways	Hard and soft token remote access authentication	(415) 964-0707
Talos Technologies	Biometric ID based on hand geometry	(503) 292-8682
Recognition Systems	Biometric ID based on hand geometry	(408) 364-6960

SECURITY TESTING AND MONITORING

Internet Security Systems	Multiple products	(770) 395-0150
WheelGroup	Multiple products	(210) 494-3383

10 steps to securing your Web site



By Kevin Stevens and Winn Schwartau

Nobody wants their million-dollar Web site to become the next victim of Graffiti Man, who rewrote home pages of the CIA, Department of Justice and the British Labour Party. Here are the Top 10 things you can do to make your Web site a safer place to do business.

1. Conduct a global risk assessment of your computing environment to identify any possible vulnerabilities that could impact the Web site or vice versa. Find out what systems you have and how back-end systems are connected to your Web server – and if they really need to be. Make sure unauthorized users can't gain access to sensitive files and applications. Consider using your audit staff for this step.

2. Avoid conflict of duties. Many organizations' Web administrators are also responsible for security, system upgrades, testing, programming and a host of other functions that are inherently in conflict with good security policies. If your Web site is playing second fiddle to other duties, you will lose.

3. Create a security team. Include representatives from security, audit and Web site administration. On a routine basis, the team should review system logs, Computer Emergency Response Team (CERT) alerts, and vendor notices of upgrades and patches.

Check out Fusion for tips on how to secure services such as FTP, telnet, SMTP and NFS. Enter the number above in the DocFinder box on the home page.

http://www.nwfusion.com

4. Use firewalls and routers to filter protocols that are not required for business operations. Maintain logs in a secure directory on the server, or on a secured server not directly connected to the Web server. Review the logs routinely and don't let system administrators access them.

5. Common Gateway Interface scripts and programs, as well as client executables should be evaluated periodically to ensure that no improper or high-risk functions are possible without a direct correlation to an approved business requirement.

6. Protect the Web site against Domain Name System (DNS) corruption by using a cryptographic authentication system. Alternatively, verify the identity of all IP sources prior to granting system access.

7. When you install any new hardware or software, change the default settings for administrative passwords and operating system properties. Continue to change passwords – at least every 30 days. System administrator passwords should be changed automatically when a new administrator is appointed.

8. Document all services running on the site. There are some services in particular that should be secured as their existence and corresponding vulnerabilities are known to many hackers. These include File Transfer Protocool, telnet, Simple Mail Transfer Protocol, Network File System, Trivial FTP and Network Information System.

9. Make sure your Web site is protected from rogue Java applets. There are a couple of generic ways to mitigate security risks from applets:

- For Java-enabled Web browsers such as Netscape Communications Corp.'s Navigator, you can configure the security preferences dialog box to prevent downloading of Java applets.
- Protect yourself from attempts to modify files, memory or threads by preventing an applet from accessing sensitive information. Using the applet viewer, the name of the operating system, for example, can be hidden by redefining its properties. This could be done by changing it to read os.name=null.

10. Develop a backup and business resumption plan. Have the security team develop, test and maintain a checklist of scenarios whereby the Web site cannot function. Then develop a response plan for dealing with each scenario. Update the plan as new alerts become known.

Stevens is an independent marketing consultant and auditor based in Sykesville, Md. He can be reached at (410) 795-3436.

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Authentication: From passwords to retina

In the security world, there are three generally accepted means of identifying users, each with its pros and cons, strengths and weaknesses.

1. "Something you know" is the simplest and weakest means of user identification — a personal identification number, a social security number or anything you keep in your head. The conundrum is simple: If the password is easy to remember, it's easy to get hacked. If it's complicated enough to withstand an attack, it's too hard to remember. And many of us have so many passwords that we write them down, defeating their purpose.

Replacing passwords with pass-phrases, which are easier to remember and harder to guess, is a good alternative. The pass-phrase, "There's no place like home" has 27 characters and is easy to remember but hard to guess. To make it even stronger, this phrase can be written in a number of ways: all caps, all lowercase, some mix or maybe with funky punctuation. The point is to be creative.

2. With the stronger "Something you own" ID systems, you need to have possession of a device or token, such as the magnetic strip cards we use at automated teller machines. Smart cards offer similar capabilities with more power and flexibility, but both require special readers, which are cumbersome and expensive.

Smart PCMCIA cards offer a better form factor and are becoming more popular for user IDs.

Another wrinkle is "Something you own, something you know," which includes hard tokens that generate one-time passwords, such as Security Dynamics Technologies, Inc.'s SecureID Card. Secure Computing Corp. offers a suite that includes hard tokens and a software approach, LOCKout, which embeds the ID into a computer, freeing the user from having to carry around a card.

3. "Something you are" refers to the biometric characteristics unique to each of us. It offers the strongest user identification and authentication.

Thumbprints are unique, and readers are finally coming down to less than $300. In five years, expect them on your credit cards to be used at the 7-Eleven.

Your retinal pattern is unique, too, but this technique is still expensive, and some folks object to sticking their eyeball into a laser beam. Go figure.

Then there's the technology that can uniquely identify us from the infrared signature of our facial capillary pattern. It works from as far away as 50 meters and can penetrate cosmetic surgery, disguises, colds and fever. There is no escape.

Vocal patterns are unique, and some telephone companies use this as a security gateway for maintenance. But the ultimate means of biometric identification is a DNA print. Invasive, yes. Proof-positive, though. Less esoteric, but increasing in popularity, is handwriting comparisons.

I hope I don't need to reinforce the idea that passwords are too weak for any serious security efforts (there, I did it anyway). Remember that user identification is the most critical means of protecting your information assets, and that securing the front door with adequate locks is the first and biggest step you can take.

— Winn Schwartau

Sage advice from Citibank security czar

Stephen Katz, chief information security officer for Citibank, N.A., has years of experience in implementing security systems. Here, he offers some sage advice.

First off, learning to think correctly is a big step. Ask yourself these questions: How do I know who's using my network and information resources? Do I care? Who do users claim to be, locally or remotely? Once they tell me who they are, can I make them prove it? Any technology that doesn't help you address these questions should not even be considered.

Once users have proven to you who they are, you need to ask: How do I control what they do? Do I care? Do they have unlimited access to everything? Or is access restricted? And if it is restricted, who chooses the restrictions, and how are they enforced?

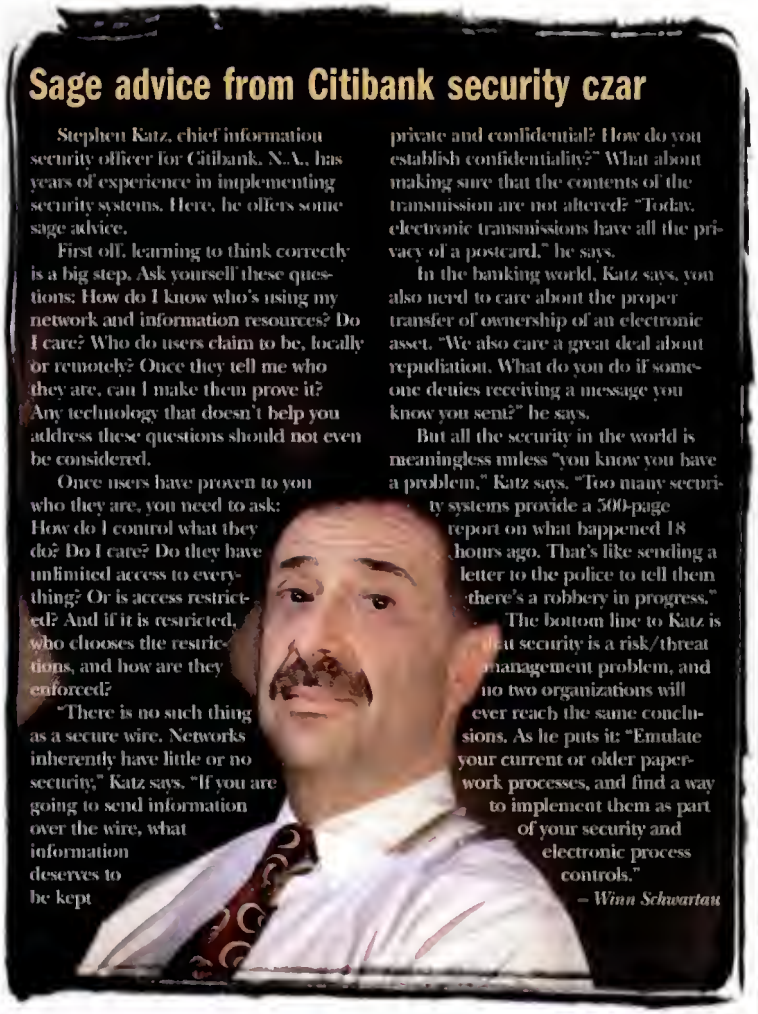
"There is no such thing as a secure wire. Networks inherently have little or no security," Katz says. "If you are going to send information over the wire, what information deserves to be kept private and confidential? How do you establish confidentiality?" What about making sure that the contents of the transmission are not altered? "Today, electronic transmissions have all the privacy of a postcard," he says.

In the banking world, Katz says, you also need to care about the proper transfer of ownership of an electronic asset. "We also care a great deal about repudiation. What do you do if someone denies receiving a message you know you sent?" he says.

But all the security in the world is meaningless unless "you know you have a problem," Katz says. "Too many security systems provide a 500-page report on what happened 18 hours ago. That's like sending a letter to the police to tell them there's a robbery in progress."

The bottom line to Katz is that security is a risk/threat management problem, and no two organizations will ever reach the same conclusions. As he puts it: "Emulate your current or older paper-work processes, and find a way to implement them as part of your security and electronic process controls."

— Winn Schwartau



DANUTA OTFINOWSKI

The Holy Grail of single sign-on

By Ray Kaplan and Winn Schwartau

Many of the productivity improvements client/server technology promised have never been realized because users, administrators and IS management continue to juggle multiple user IDs, passwords and logon procedures.

Lest you consider this trivial, the Aerospace Industries Association points out that an organization with 5,000 employees could be spending as much as $3.5 million annually on this lost productivity.

There are any number of single sign-on (SSO) products that purport to solve the problem. Many have traditionally left security and application integration questions unanswered, but that's beginning to change. SSO vendors are stepping up to the plate with viable technology and products that are withstanding the rigors serious large commercial enterprises demand.

Now the problem is defining your needs and selecting the right SSO product. To help you along in that process, we've collected these rules of thumb.

An SSO solution should not:

- Modify the kernels of any operating system in your infrastructure.
- Introduce new vulnerabilities by using attack tools like Satan when they become available.
- Use proprietary cryptography, protocols and APIs.
- Disrupt or break existing security mechanisms such as firewalls.
- Require wholesale changes in the way your infrastructure is configured.
- Represent a single point of failure for your entire enterprise network.

An SSO solution should:

- Include the capability to support security services beyond user authentication, such as confidentiality and integrity.
- Scale well over the entire enterprise.
- Be efficient in its use of network resources such as bandwidth.
- Have sufficient administrative capabilities to support the size, diversity and distribution of your user community.
- Use well-known, widely accepted, standards-based cryptography, protocols and APIs.
- Be able to immediately deal with the emergency revocation of individual user IDs and passwords.
- Enable you to quickly and efficiently bulk-load and activate large numbers of users.
- Have the capability to support other components in your infrastructure beyond workstations and servers, such as routers, firewalls and network management systems.

An SSO solution vendor should:

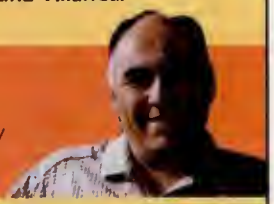
- Be upfront with the limitations of its technology, products and company.
- Have experience in the design, implementation and deployment of SSO.
- Have depth and breadth in its network security-related experience.
- Provide an adequate level of support services, such as customer support and consulting.
- Demonstrate an understanding of your needs and an ability to meet them.
- Have good references.
- Be willing to discuss the total cost and magnitude of change that will be required by the system.
- Be capable of helping your system and application vendors integrate the SSO solution with their products.
- Be capable of customizing its product to meet any special needs you identify.
- Have a strategy that will allow you to move forward and adopt new idioms as they develop.

Kaplan is a security consultant with CyberSafe Corp. in Issaquah, Wash. He can be reached at ray.kaplan@cybersafe.com.

HOW FORE ATM *Helped* DREAMWORKS *Animate* ITS SUCCESS.

"If an artist has to stop and wait for an electronic process, work slows down, and that's deadly on a movie."

That's Bill Villarreal, co-head of technology at Dreamworks SKG, explaining the challenges of applying cutting-edge technology to traditional hand-crafted animation. Dreamworks is currently producing its first animated feature, "Prince of Egypt," and Villarreal



Bill Villarreal
Co-Head of Technology
Dreamworks SKG

needed a high performance multi-service network that would connect the team of directors, animators, layout artists and producers on the picture.

"Once we decided on ATM, we looked at various vendors, and FORE had the most extensive experience. Their support and commitment to ATM were well known in the industry."

Among the countless advantages of FORE ATM for Dreamworks was "the ability to reserve bandwidth over the system so we could deliver JPEG video streams, enabling our artists to track the current state of the movie. It also means that Jeffrey Katzenberg can call it up on his desktop and monitor the film's progress."

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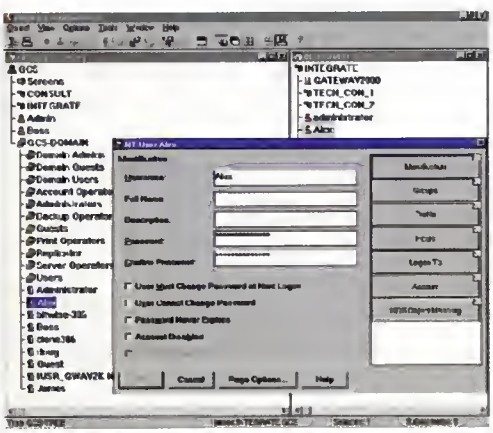
NetworkWorld TEST ALLIANCE

Pulling NT users into NDS

By James Gaskin

If you're tired of complaining about Windows NT's underpowered domain services, do something about it — manage NT with Novell Directory Services (NDS). That's the premise of NetVision, Inc.'s Synchronicity for NT. Synchronicity lets you use Novell, Inc.'s NetWare Administrator (NWAdmin) program to manage NT domain and workgroup clients.

While it plugs directory holes in a manner somewhat similar to Banyan Systems, Inc.'s StreetTalk for Windows NT (reviewed last week), Synchronicity for NT succeeds where StreetTalk fails. This is because it uses a stable administration client and supports more than just basic file, print and messaging services, thanks to a moderate but growing list of NDS-enabled applications. Providing a single management point for all network clients, as Synchronicity for NT does, makes good sense.



The GCS-DOMAIN *shows the NT domain objects imported into NDS. The foreground window shows the NT user information displayed within the NetWare Administrator program.*

Running Synchronicity

Synchronicity requires you to have a NetWare 4.10 or IntranetWare 4.11 server on the network, and it runs on Windows NT 3.51 or 4.0. If you're still trying to run Microsoft Corp.'s Windows NT client for NetWare, give up. Synchronicity requires Novell NetWare Client Version 4.0 for NT, which makes the NT station a full member of NDS and loads special versions of NWAdmin for NT.

Synchronicity for NT installation routinely copies several NetWare Loadable Modules (NLM) to NetWare servers, modifies the NDS schema by adding NT objects to manage, and gives you what Novell calls "snapins" for NWAdmin programs for both Windows NT and 95. No changes are made to the NT side during installation, except for the addition of synchronization software that implements updates sent from NDS.

NDS absorbs the NT domain you specify. You may clump NT domains into a single NDS branch or spread them out anywhere on your NDS tree. If your company has built your NDS tree with separate branches for each workgroup, Synchronicity allows you to merge your NT domains into each local workgroup, as well. NDS then holds all the information, sending NT details back to the NT server only as needed.

To manage objects on NT systems, you simply use NWAdmin. Normal user management tasks for NT can be handled by NDS administrators with little extra time. Synchronicity passes NDS changes down to NT domains. You can't make changes to NT domains controlled by NDS by using native NT tools — Synchronicity is not a two-way street — but since NWAdmin offers more features, functionality and control than NT user management programs, this is not a problem. Some details, such as access to the NT disk, must still be controlled using the NT administration tools.

Setting access by groups makes life easier because NT disk access controls are less fine-grained than those for NetWare users and volumes.

Users from the NT domain appear under their own icon in NWAdmin. "Synchronized" users must be created in a portion of the NDS tree common to the NDS user context and the NT domain (see screenshot). Configuration settings within Synchronicity determine whether newly created users are automatically linked, and whether to sync their passwords. External programs are supplied to synchronize passwords for linked users created before installing Synchronicity.

Importing existing users to either NT or NDS creates potential for name conflict, and Synchronicity takes that into account. NT users can be placed in any NDS container, and algorithms are available to ensure names are unique.

Passwords can be assigned, set to the user name or left off. Users may be forced to supply a new password the first time they log on.

User profile modifications common between NT and NetWare will show when applied to either the NT group user or the corresponding NDS user, assuming the two are synchronized.

In other words, changing the allowed logon times for the NDS user will also change those times for the synchronized NT user. When the NT synchronizer program is active, the change is nearly instantaneous, at least on the small lab network.

User account items tracked by NDS, such as charges for disk use or connect time, don't have analogs on the NT side. Synchronicity obviously can't do anything about that. The only control NDS has over the NT workgroup server is typical user details, such as forcing password changes and allowable connection times. You can't control user access to NT files and directories.

Synchronicity also does not let you create a printer or print queue on the NT domain from NWAdmin.

Not burdensome

The NLM programs, including a console program that tracks events queued and server memory used, continuously run in the background on the NetWare server.

Maximum memory use on the server during the test was 11K bytes; the NetVision Global Event Services NLM is not a resource hog. The NT synchronization program may run constantly, or you can force updates after making NDS changes. For active systems you should leave it on so user profile changes happen immediately.

We saw no impact on the NetWare server in normal background mode,

Providing a single management point for all network clients, as Synchronicity for NT does, makes good sense.

NetResults

Product: Synchronicity for NT

Vendor: NetVision, Inc.
(801) 785-5190
www.netvisn.com

Price: Synchronicity Starter Kit = 1 NDS server license plus 25 NT user licenses - $995
Additional options:
- 1 NDS server license - $300
- 10 NDS server licenses - $2,500
- 20 NDS server licenses - $4,000
- 50 NDS server licenses - $7,500
- 100 NDS server licenses - $10,000
- 10 NT user licenses - $300
- 25 NT user licenses - $725
- 50 NT user licenses - $1,400
- 100 NT user licenses - $2,700
- 500 NT user licenses - $13,000
- 1,000 NT user licenses - $25,000

Pros:
- ▲ Clean installation – includes NetWare upgrade files (if needed).
- ▲ Good documentation on CD using included Envoy viewer and Word 6.X format.
- ▲ Places NT users under superior NDS management applications.

Cons:
- ▼ Can't control user access to NT files or directories.
- ▼ Works in only one direction – NetWare to NT.
- ▼ Combination of NetWare Administrator and Synchronicity on NT server eats memory.

ScoreCard

	Synchronicity for NT
Overall score	**8.4**
Directory services (30%)	9
Management/administration (20%)	9
Enterprise scalability (20%)	8
Flexibility and ease of use (10%)	8
Stability (10%)	8
Installation (5%)	7
Documentation (5%)	6

although early NDS modifications bumped utilization up slightly. However, busy application servers would be a poor choice for running Synchronicity in the background; the occasional CPU spike from updates adds to the server load, and synchronizing is delayed.

Log information tracking user modifications can be written to the NT System Event Log or a file of your choice. You can limit file size so as not to be surprised one day by the log file taking over your disk, and you can set how much change information is logged.

Synchronicity for NT installs easily and includes comprehensive online documentation. Installing the product on a NetWare 4.10 server may require multiple file upgrades, but all the necessary files are included on the CD-ROM and can be applied automatically. We had to reboot the Windows NT server and the station modifying the NWAdmin program to load some of the new programs.

The NetWare server did not require rebooting; loading one new Synchronicity NLM pulled up the second required NLM automatically.

Snapins to the NT version of NWAdmin worked without our intervention, which is not always the case, even with Novell's own snapins.

Good for mixed environments

We don't believe Synchronicity could be much better in this first Version if Novell itself had released the product, although it could be less expensive. The installation works, once you get it started, and the product does everything correctly. It would be nice if Version 1.1 allowed some level of NT Server disk access control.

Network managers in mixed environments will find Synchronicity a help. However, the price of adding both NetWare and Synchronicity makes it fairly expensive to use this product for an all-NT shop.

Microsoft and Novell could each make the product obsolete, but recent delays from both companies suggest the niche for Synchronicity will exist for quite some time.

HOW WE DID IT

We ran IntranetWare 4.11 and Windows NT 4.0 (Build 1381) on identical Gateway 2000, Inc. Pentium 120-MHz systems with 32M bytes of RAM. The Windows NT system included Novell, Inc.'s NetWare Client32 for Windows NT software. Primary test clients were a BitWise Designs, Inc. Portable 386 running Windows 3.1 and an Acer America Corp. Open Pentium 75 running Windows 95.

We set up NetWare clients with no access to Windows NT Server, and vice versa with Windows NT Server clients. We then used NetVision, Inc.'s Synchronicity to provide access and management between the two previously separate networks.

Gaskin is a Dallas-area network consultant and author. His two latest books are Corporate Politics and the Internet: Connection Without Controversy *from Prentice Hall and* The Complete Guide to NetWare 4.11/IntranetWare *from Sybex. Gaskin may be reached at james@gaskin.com.*

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Briefs

■ *Training firms* **Global Knowledge Network, Inc.** *of Waltham, Mass., and* **Migration Software Systems, Ltd.** *of San Jose, Calif., have teamed to develop a seminar that focuses on data warehousing.*

The three-day seminar, titled Data Warehousing Fundamentals, will be held in Chicago on Feb. 24-26; in Santa Clara, Calif., on March 10-12; in Washington, D.C. on April 7-9; and in New York on May 5-7. The seminar costs $1,500. A five-day, hands-on course called Data Warehouse Design and Implementation will run this spring and will cost $2,500.

Global Knowledge Network: (800) 332-5656.

■ **Oracle Corp.'s Oracle Education** *division has activated its* **Oracle Learning Architecture** *Web site (http://ola.us.oracle.com), where registered users can run interactive training programs.*

Users can access more than 75 multimedia training programs with instructions for using Oracle, Microsoft Corp., Novell, Inc. and Lotus Development Corp. products. There are also courses covering topics such as using TCP/IP. Users can view course abstracts and run demo programs before signing up to take a fee-based course.

Oracle Education: (415) 506-7000.

Good documentation untangles wiring snarls

By David Zehrung

You know the drill. It's time to expand your phone system, but all you can envision is a contractor spending hours of billable time combing through spaghetti bowls of wires — voice wires, data wires, wires to nowhere — looking for the right ones to replace.

What you need is a good documentation system that points the way. Such a system tracks all the details about the wiring, hardware and software used in various network systems. It will also help internal staff more quickly execute simple moves, adds and changes, as well as pave the way to more easily integrate telephony and computer systems on a single cable plant.

Despite those obvious benefits, we've estimated that 80% of our client organizations have no ongoing cabling documentation process in place.

Sure, organizations get diagrams that map out the cabling plant as it was originally installed. But few companies faithfully update those diagrams as changes are made, so the diagrams rarely reflect reality.

Instead, you should have a system that enables you to easily document an existing cabling plant and modify it as changes are made. The system can start out being something as simple as a spreadsheet and evolve into one that spans multiple databases.

Many off-the-shelf documentation programs are available, but it may be better to develop a homegrown approach, one tailored to your needs. Whether you use a spreadsheet or database, there are a number of data fields you'll want to include in a documentation program. These include user name, department, type of device being connected, data address, physical port ID, riser cable assignment and wall jack number.

When establishing such a documentation system, you should first develop an identification scheme that makes sense for your physical environment. If your firm has multiple buildings, for example, you may need to adopt a naming scheme that requires separate spreadsheets or database files for each building.

Next, you need to devise a logical way to describe your physical system so your spreadsheet or database provides an accurate lay of the land, a view that's clear enough that someone can quickly locate the specific cable that connects PC A to LAN B, for example. Whenever remodeling results in physically moving a system, make it the responsibility of that system's administrator to feed updates to the documentation system.

If you're going to design your own program, remember to keep it simple. To see if you've come up with a simple yet workable cable numbering scheme, try visualizing a remodeling project that requires relocating several cables. If the scheme still makes sense after the move, you're in business.

You may get into trouble if the cable identification system is based on room numbers or some tricky sequential number assignments because it may break down when changes or additions are made. This is because cables may go to new rooms or a sequence may get broken. So keep cable ID numbers as short as possible but long enough to identify the closet where each cable terminates.

Avoid having different numbering schemes for data and voice cables, even if they are not the same kind of cable. Rather, you can number them in different ranges of the same numbering scheme, according to where they terminate in the wiring closet.

For instance, if the eighth floor of your building has closets A, B, and C, you can number cables starting with an 8 to indicate the floor number, followed by an A, B or C to relate to the closet where the wire terminates, and then a three-digit code to indicate where the cable terminates in the closet.

This could result in combinations such as 8A003, 8B111 or 8C032. Post a simple one-page key for reading this numbering system in every wiring closet as a reference for technicians.

Above all, remember that a good documentation system lets you plan from a centralized office and easily direct vendors in remote work areas. This minimizes the amount of testing, tracing and new installation work your staff and vendors must do to support expansions and repairs. This way, there is minimal disruption to business operations.

Zehrung is a communications technology analyst at Sparling, Inc., an electrical engineering, lighting design and technology consulting firm in Seattle. He can be reached by phone at (206) 667-0548 or via E-mail at dfz@sparling.com.

NETWORK BOOK REPORT

Corporate Politics and the Internet: Connection Without Controversy

James Gaskin (Upper Saddle River, N.J., Prentice Hall) 452 pp., $24.95. Phone: (800) 947-7700; ISBN: 0-13-651803-6.

Network consultant James Gaskin enlightens IS executives, network managers and Webmasters about the Internet-related legal, ethical and personnel challenges brought about by technology in the workplace. He offers strategies for managing things such as 'Net access privileges, productivity and security. He also provides suggestions for dealing with discrimination, intellectual property and defamation problems.

SNA Interconnections

John Chiong (New York, McGraw-Hill) 313 pp., $55. Phone: (800) 262-4729; ISBN: 0-07-011486-2.

This book gives you the facts on how SNA and TCP/IP can work together in multiprotocol internetworking environments. An overview of SNA and a comparison with TCP/IP provide a foundation for the novice. Experienced net professionals and SNA specialists can learn more about hierarchical SNA 3270 SDLC, SNA APPN high-performance routing, SNA TCP/IP interconnections, how to extend SNA via frame relay and ATM, and how SNA works with integrated LAN/WAN switching and wireless networks.

Novell's Guide to IntranetWare Networks

Jeffrey F. Hughes and Blair W. Thomas (San Jose, Calif., Novell Press, IDG Books Worldwide) 1,079 pp., $59.99. Phone: (800) 762-2974; ISBN: 0-7645-4516-7.

Novell, Inc. recently released an intranet server package that pivots on Novell Directory Services (NDS) and includes NetWare 4.11, Novell Web Server 2.5, IP/IPX gateway and FTP services. This book carries you through the design, implementation and maintenance of IntranetWare, as well as NDS tree design and migration strategies. Appendixes discuss NDS error codes, server console commands and diagnostic tools.

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Pioneering ideas gain strength in our Technical Research Center (TRC), where next-generation networking is clearly taking shape, from operating systems to ATM switching and far beyond. Our Network Operations Center (NOC) provides critical client support 24 hours a day. Our Managed Network Services span the fullest range, from single functions (Help Desk, infrastructure support) to complete enterprise-wide network operation. Beyond data offerings, we are redefining the boundaries of interactive multimedia solutions and Internet services.

Most importantly, along with our worldwide technical presence, we demonstrate a tradition of hiring and developing the brightest engineering, consulting, and marketing personnel. That's where you come in.

We currently have the following opportunities available for Network Integration knowledgeable professionals.

MIS

LAN Specialists

Responsible for the management, administration, operation and support of PC and local area network hardware and system software of deployed desktop and servers.

Programmers

Responsible for application development utilizing FoxPro, Microsoft SQL Server, C++, MS Visual Basic.

SUPPORT SERVICES

Customer Service Engineers

Serve in an advisory role within the entire company to resolve complex and unique customer technical issues and systems problems concerning the operation of internetworks using a variety of industry leading and niche vendor's equipment.

Event Coordinators

Responsible for coordination of customer occurrences or incidents on a customer's contracted equipment or network that results in a notification of BANI's Technical Assistance Center.

Network Management Specialists

Responsible for the development and operations of enterprise-wide data networks based on UNIX and Windows NT platforms.

MARKETING

Program Managers

Coordinate with Marketing Communications the development of brochures, customer presentations, press releases, advertisements, and web content. Develop presentation for Sales training which provides a description of market opportunity, identifying opportunities, how the program addresses customer's business requirements, analysis of competitive offerings, and identifying BANI's positioning.

Field Marketing Managers

Implement internal/external Sales Support programs; coordinate sales training and seminar attendance; and provide technical sales and program marketing support. Responsibilities include evaluating released programs and recommending improvements. Will also coordinate the distribution of program specific information (i.e., product/vendor release information, vendor specific research materials, customer presentations, and new program specific marketing literature).

FIELD OPERATIONS

Field Engineers

Install and configure LAN and WAN data communications hardware and software solutions for our customers.

Field Technicians

Install copper, fiber, and coax transport systems.

Project Managers

Overall accountability for the delivery and management of large products including customer satisfaction.

SALES

Sales Managers

Handle the sales of BANI information technology, telecommunications and/or Wide Area Network Products and services direct to large business customers.

PRESALES ENGINEERS

Network Engineers

Design and engineer enterprise-wide LAN and WAN solutions for our customers.

If unable to visit us in person, please send your resume to: **Bell Atlantic Network Integration, Inc., Human Resources, Attn: 1/27-NW, 52 East Swedesford Road, Frazer, PA 19355, Fax: (610) 993-8072, E-mail: jobs@bani.com**

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Reporting to Director of Marketing, position is responsible for developing/implementing network integration and planning. Requires BSEE/CS (MBA preferred) and 5-10 years of experience in telecommunications/network industry, including systems integration, project planning, program management, customer support and general management. Travel required. Consulting background a plus. **(Code: KSBNSNW)**

APPLICATION ENGINEER
Network Design & System Engineering
(Philadelphia Area)
Position provides network design planning, system engineering and sales support. Will assist customers in network design planning, recruitment definition, and coordination of site survey/preparation, and will support managers with customer meetings, product presentations and RFP response. Requires BSEE/CS and 5-7 years of experience in advanced communications networking, including routing, ISP systems, LAN/WANs, and client-server systems. Excellent communication skills essential. Travel required. **(Code: KEZANW)**

NETWORK DESIGN AND SYSTEM ENGINEERING
Provides network design planning, system engineering and sales support for GI's SURFboard™ line of advanced cable modem and Internet products. Will assist customers in network design planning; define customer requirements; coordinate site surveys/preparation; and support account managers with customer meetings, product presentations, and RFP responses. Requires BSEE/CS and 5-7 years of experience in advanced communications networking. Knowledge of routing, ISP systems, LAN/WANs, and client-server systems essential. Must have excellent verbal and written communication skills. **(Code: KNDNW)**

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- Product Manager, ATM NMS
- Marketing Manager, Public Network Systems
- Marketing Manager, Enterprise Network Systems
- Director Marketing, ATM International
- Product Manager, ATM Access
- Product Manager, IP Switching (Middlebury or Boston)
- Director Product Management, Carrier Access
- Director Advanced Network Access, ANA (North America)
- Regional Marketing Manager, ATM (Chicago)
- Regional Marketing Manager, ANA (NYC, Atlanta)
- Product Manager, OEM Relationships

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- Sr. S/W Engineer, ATM Network Management Systems
- Sr. Technician, ATM Development
- Section Manager, ATM H/W Development
- Principal Engineer, ATM Traffic Management
- Principal Engineer, ATM Board Level
- Principal Engineer, Signaling
- Engineering Documentation Specialist
- Sr. Engineer Test, ATM H/W
- Sr. Compliance Engineer, Technical Services Group
- EDA Simulation Engineer
- Mechanical Engineer, Packaging Backplanes
- Manager, Technical Publications
- Sr. CAD Designer
- Section Manager, HDSL Products
- Sr. S/W Engineer, Modems
- Sr. H/W Engineer, Modems
- Sr. Engineer H/W & S/W, Modems

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INFORMATION TECHNOLOGY • Middlebury, CT

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- Manager, Voice/Video

FINANCE • Middlebury, CT

- Cost Accountant
- Financial Analyst

GDC SERVICES • Naugatuck, CT

- CCIE Internetworking Engineer
- Sr. Systems Engineer, Tech Support ATM
- Sr. Applications Engineer
- Manager Business Development, Services Marketing
- Business Marketing Specialist (Chicago)
- Sr. Training Specialist
- Sr. Field Engineers (throughout U.S.)
- Telemarketing Superior/Representatives

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- SMT Technician

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- District Engineering Group Leader (Chicago, IL; Boston, MA)
- Principal Network Engineer (Middlebury, CT; NYC; Alameda, CA; Los Angeles, CA)

U.S. Telecom Sales

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- Director, Bell Atlantic/NYNEX (Pennsauken, NJ/Washington, D.C.)
- Major Account Manager (Washington, D.C; Bell Atlantic; Los Angeles, GTE)
- Principal Network Engineer (Washington, D.C.; Warren, NJ; Middlebury, CT)

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Intel WorkGroup Solution

Express WorkGroup Switching Hub Bundle gives servers dedicated 100Mbps bandwidth, moving clients to 100Mbps with Intel Hubs and Adapters, and a downlink module to connect to existing 10Mbps LANs. The WorkGroup Solution includes
One Intel Switching Hub (ES100TX)
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10/100 Ethernet Switches

INTEL

Express Switching Hub, Five Switched 100Base-TX Ports, Plus Two Slots for 100Mbps TX/FX (ES100TX) **$3,100**

Two-Port 10/100 Downlink Module for 10Mbps LAN Connectivity (EC100DL) **$725**

NBase

MegaSwitch II 10/100 Auto-Sensing Eight-Port Switch Plus Two Slots for 100Base TX/FX/ATM/GigaBit Modules (NH2012) **$6,495**

BAY NETWORKS

Bay Network Lattis Switch System
Fast Ethernet Switching Hubs

10/100 Mbps UTP Switch,16 RJ45 Supports 10/100 Mbps Ethernet, Mode (28115) ... **$6,435**

100Mbps Fiber Optic Switching Hub (28104) **$13,080**

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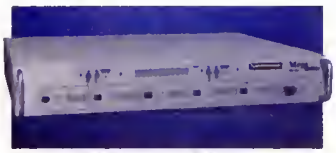

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PROStack EtherSwitch Stackable Ethernet Switch, Sixteen RJ45,Two Expansion Slots for High-Speed Modules. 100Base-TX/ATM (CPW1601A) **$3,790**
(CPW16018) **$4,425**
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EtherSwitch 1400, Twenty-Five 10Base-T, Two Slots 8K MAC (CPW1402) **$5,665**
One-Port 100Base-TX Module (CPW1411-X) **$686**
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D-Link

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ProFast Switch Four 10Mbps Ports Plus One 100Base-TX Port(DES 2205) **$890**

3COM

LinkSwitch 1000, Twenty-Four Switched 10Mbps Port, One 100 Base-TX Fast Port (3C16900) **$3,135**
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100 Base-TX Fast Ethernet Hubs

INTEL

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NBASE

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100Base-TX Twelve-Port Stackable Hub (NH1012) **$1,425**

D-LINK

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Eight-Port 100Base-TX Hub (DFE808TX) **$565**

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100 Base-TX Twelve-Port Stackable Hub **$1,545**

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3COM

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Hubs

WEST HILLS

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Sixteen-Port 10BT Hub, BNC & AUI Ports (HT16TP) **$178**
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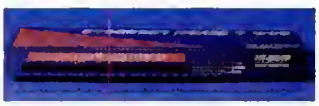

Sixteen-Port 10BT Smart Hub, AUI Ports (UE2041) **$290**

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Implementing FRAME RELAY

Strategies and Solutions

Seminar Overview

Frame relay offers companies the chance to increase network performance while decreasing their costs of operations. As a result, frame relay has become the fastest growing data service in the industry and is only matched by the growth rate of the Internet. Since its introduction nearly five years ago, thousands of companies have chosen frame relay to give them efficient and effective wide area communications.

Implementing Frame Relay: Strategies and Solutions will help you decide whether frame relay is the right service for your company, and you will learn what benefits you can expect from implementing a frame relay network. In addition, this seminar, taught by Tom Jenkins of TeleChoice, Inc., a frame relay expert, will explore which applications perform well on a frame relay network and which carriers you need to consider in your evaluation process.

Even if you have already implemented a frame relay network, attending this information-packed one-day seminar will teach you the new features and services available in the market and how they can benefit your company.

Whether you are a network/telecom planner, manager, designer or administrator, **Implementing Frame Relay: Strategies and Solutions** will provide you with the information and insight necessary to more efficiently and effectively implement and manage your network.

12 Key Benefits of Attending . . .

1. Exptorn thn inhnrent bnnnfits of ueing framn relny
2. Lenrn when frame relay is e more economical sotution then other service options
3. Understand thn limitations and benntits of using NNIs
4. Discover which frame relay eervice featuree ere eignificent end which ere merely hype
5. Gain an understanding ot the direction ot the frame reley merket
6. Annlyze the diffnrencne between mnjor U.S. frame relay providers
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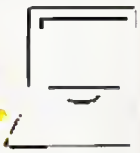

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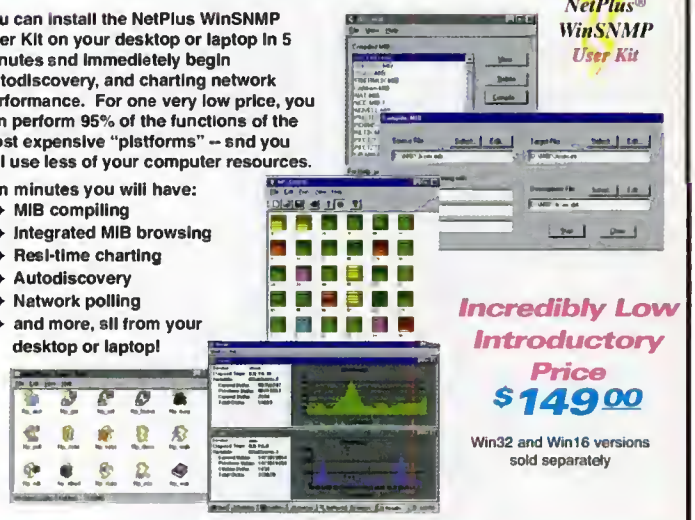

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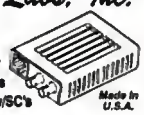

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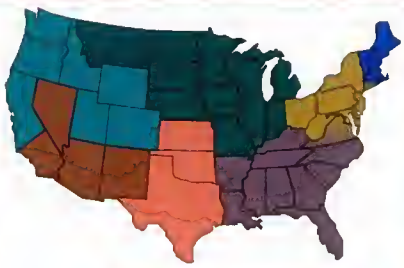

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DIRECTORY OF SERVICES

Reform

Continued from page 1

Almost everyone but the local companies themselves agree that the RBOCs and their combative brethren at GTE need to go lighter on the legal wrangling over interconnection of their networks with new competitors'. But equally important, AT&T and other long-distance carriers need to stop waiting for the day when all the rules favor them — since that day may never come — and invest more heavily in their own local businesses.

"AT&T is proceeding with an abundance of caution," says Reginald Bernard, assistant director of communications systems for State Farm Insurance Co. in Bloomington, Ill. "Their execution is exceedingly slow."

AT&T does not offer facilities-based local services, but it has begun a controlled introduction of local residential service in Sacramento, Calif., and will soon introduce resale service in Connecticut and Illinois, says Harry Bennett, vice president and general manager of AT&T's local services division.

But experts suggest users not wait for a long-distance carrier to camp on their doorstep with a proposal for a resold local exchange service. Facilities-based local carriers such as WorldCom, Inc., which recently bought pioneering competitive access provider MFS Communications Company, Inc., stand a better chance of serving the needs of corporate users, experts say.

Ultimately, AT&T hopes to introduce resale services in as many as 15 states this year, Bennett says.

But analysts question whether that will do enterprise network managers any good. While most large companies are interested in buying end-to-end services from a single carrier, that support collapses if the local exchange line is merely resold from an RBOC. Only 12% of network managers at large companies said they would agree to such an arrangement, according to a Forrester Research study.

Making its presence known

Another user option may be looming on the horizon. With the expectation of a cash infusion from proposed merger partner British Telecommunications plc, MCI Communications Corp. is forging ahead with buildouts of local metropolitan networks.

Typically, they involve downtown Synchronous Optical Network (SONET) rings and a central office-class switch from Siemens AG or Northern Telecom, Inc., with T-1 tail circuits of up to 20 miles if necessary to reach individual buildings, says Marc Brown, MCI's director of local service marketing.

The result: MCI, unlike its two principal long-distance rivals, is making its presence felt in the nation's big cities, with service launched in 18 of them and more to come. "It's primarily MFS and MCI you see written in Day-Glo paint all over the pavement," says Tim Stevens, director of advanced access services for Bell Atlantic Corp. "When you see MCI on the manhole covers, they've arrived."

Brown compares MCI's decision to forge ahead despite court appeals of key Federal Communications Commission decisions with a couple's decision to start a family. "If you wait for the perfect time to get pregnant, you'll never get started," he says.

Indeed, as the first anniversary of 1996's telecom reform act approaches, many potential competitors are expected to point to the lawsuit filed by local carriers to stop the FCC's interconnection rules as the principal reason for the delay in widespread competition.

Surprisingly, the actual decision rendered by the court may be less important than the speed with which it rules.

Most of the states that have completed the required arbitrations between RBOCs and new entrants have set pricing in accordance with the FCC guidelines anyway.

Among the big carriers, only MCI will commit to a figure for local investment this year: $700 million. Neither AT&T nor Sprint Corp. will say how much they are spending on local market entry this year. Part of the hesitation, analysts say, is that a widespread deployment of local service would help the RBOCs demonstrate that local competition does exist — a necessary precondition for their applications for in-region, long-distance entry, Forrester's Goodtree says.

AT&T officials acknowledge that telecom reform has not yet proven to be all it was cracked up to be. "We're disappointed that we haven't made more progress in terms of implementation," AT&T's Bennett says.

But even then, corporate users believe the carrier needs to try harder. "They think they've made more progress than we think they've made," says Bernard, president of the SDN Users Association, an AT&T user group. "To be profitable, they've got to be able to address at least the major elements with a facilities-based strategy." ■

STILL WAITING . . .

Except for MCI, big long-distance carriers' claims about entering local markets have not come close to reality.

Carrier	What was said	When it was said	Where it stands
AT&T	Enter all 50 states via resale as soon as summer 1996.	February 1996	Controlled introduction of residential resale in Sacramento, Calif.*
MCI	Enter 20 metropolitan markets via new buildout within two years.	January 1994	Service in 18 cities for businesses located on a fiber ring
Sprint	Enter 25 new markets via telephony conversion of cable facilities.**	October 1994	No new wireline markets entered; wireless service in five areas

* AT&T local service is also available in Rochester, N.Y., but no longer actively marketed
** Sprint already owned several local exchange carriers in smaller markets around the country

FCC chief looks for telecom reform payoff

Reed Hundt is a frustrated man.

When he was appointed chairman of the Federal Communications Commission in 1993, he says, "Everyone told me about the inevitable and imminent convergence in which cable would provide telephony and the telephone companies would offer cable service." As a result, the FCC and Congress worked to write the conditions for this convergence into law.

The FCC's Hundt *is still waiting for a battle.*

So what happened? "As of now, expectations for a full-front, two-wire war are not being met," Hundt complains. And he labels the communications landscape "a stand-off in which incumbent companies warily eye each other but never really enter each other's markets."

Washington telecom policy veteran Brian Moir has an explanation for the FCC chairman. In the congressional telecom reform debate, Moir says, cable and telephone companies argued in favor of opening up both markets to competition. "But it was really all a fight to be able to buy each other, not build against each other," Moir says.

In the last House-Senate conference to shape the Telecommunications Act of 1996, Congress decided phone and cable companies could compete with one another but not buy one another, in most metropolitan areas. Since then, big cable companies have backed away from telephony, and most big local telephone companies have scaled back their video plans. And the carriers' stated plans to barge into new markets on their own?

"We knew it was BS all along," Moir says.

— David Rohde

What do carriers want?

After AT&T requested arbitration of interconnection agreements with dominant local carriers, most states ordered a resale discount for business services within or exceeding the FCC's suggested 17% to 25% range.

State	Dominant local carrier	Discount
California	Pacific Bell	17%
Connecticut	Southern New England Telephone	40%
Illinois	Ameritech	22.04%
Maryland	Bell Atlantic	19.87%
Minnesota	US WEST	21.5%
Pennsylvania	Bell Atlantic	25.71%

SOURCES: AT&T, BASKING RIDGE, N.J., AND STATE PUBLIC UTILITY COMMISSIONS

Think of resold phone lines as Version 1.0

If your primary long-distance carrier tells you it has started reselling your local telephone company's phone lines, should you switch local carriers?

Not unless you're also the type who has to be first on the block to install ATM LANs, desktop video and other cutting-edge network offerings, experts warn.

The problem is local carriers and their new resellers have not established true electronic links between their ordering systems. So orders may get lost, and carriers are likely to point fingers over service problems. "A combination of system and human failures could result in service debacles," says Joseph Kraemer, a principal with EDS Corp.'s A.T. Kearney consulting division.

Since the local carrier and reseller are likely to be long-time telecommunications giants, the required electronic interfaces usually have to be written on older systems. "They're being built on systems running COBOL and MVS," says David Goodtree, who heads the Telecom Strategy Service for Forrester Research, Inc. in Cambridge, Mass. "It's going to take a long time until those systems are up to snuff."

The government last year told all the regional Bell operating companies to give resellers electronic access to their ordering systems by Jan. 1. But only NYNEX Corp. and Ameritech Corp. came close to meeting the deadline. And most of the RBOCs are only prepared to take the system so far. "They get the [reseller's] order by E-mail, but then they print it out and walk it over to someone else," he says.

NYNEX gave resellers a Web-based browser interface, but MCI Communications Corp. says that is inadequate, claiming NYNEX does not provide access to an online table of maintenance codes.

Experts suggest you treat installation of resold local exchange lines as you would migration to a new software package — with caution.

— David Rohde

Cisco

Continued from page 1

the U.S.," said Rick Malone, principal of Vertical Systems Group in Dedham, Mass., who claims he's discussed PBX opportunities with Cisco.

"The paradigm has changed significantly over the past couple of years such that it's a LAN-driven market with distributed processors all the way down the path," he added.

Today, Cisco supports voice on its StrataCom, Inc. IPX, IGX and BPX WAN switches, and FastPAD frame relay access devices.

But new products and capabilities for routers, ATM switches, and remote access gear could emerge later this quarter and throughout the year, sources said. They cautioned, though, that the time frame may still be in flux.

Cisco declined to comment on product rollouts.

Expected this quarter is advanced signaling software for Cisco's call setup server. The software, called Dynamic Network Switching (DNS), runs on Cisco's Intelligent Network Server and provides single-hop call routing, which is designed to eliminate WAN backhauls and trunks, and maximize compression efficiency, according to sources.

Cisco is also expected to unveil a circuit emulation card, code-named Condor, for the LightStream 1010 campus ATM switch.

Condor will feature digital cross-connect Application Specific Integrated Circuits that allow the switch to connect PBXs and eliminate the need for tandem trunks, sources said.

"We're in the midst of combining our telecom and datacom arms," said Allen Robel, senior network analyst for Indiana University's computer services department in Bloomington. "We have our own Northern Telecom DMS-100 switches here and on the campus in Indianapolis. Being able to trunk those together over our existing ATM backbone seems like it would be a win for us."

In the second quarter, Cisco is looking to roll out a port adapter card for the 7200 series router, code-named Alien. This will give the 7200 circuit provisioning capabilities for transmitting voice traffic from PBXs across OC-3 ATM metropolitan-area networks.

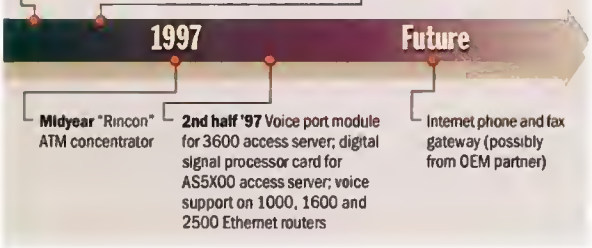
Around midyear, Cisco plans to unveil an ATM access concentrator, code-named Rincon, that will extend circuit switching, Ethernet, frame relay and video interfaces to the customer from a carrier's ATM network.

In the second half of 1997, Cisco is looking to roll out a port module for the 3600 series dial-up access server and a digital signal processor card for the AS5X00 access server, according to sources. These products will attach the access servers to PBXs and allow users to carry voice traffic over intranets, the sources added.

Cisco is also looking to roll out a device in this time frame that allows its 1000, 1600, and 2500 low-end and SOHO Ethernet routers to carry voice traffic, enabling users to bypass toll calls. ■

NOW HEAR THIS

Cisco's voice networking rollout plan



ISOC

Continued from page 1

ISOC is planning to transform a relatively obscure internal committee into a broad coalition that will tackle such timely and thorny issues as intellectual property, encryption and censorship, as well as set standards for underlying technology issues, according to Don Heath, ISOC's president and chief executive officer.

The Internet International Ad Hoc Committee (IAHC), which was formed four months ago to sort out Internet Domain Naming System controversies, is expected to gain broader authority after wrapping up a report on the naming issue at the end of this month.

Such a move would send a clear signal to the U.S. government and others abroad that the Internet community is intent on coordinating policy and regulatory debates for issues that extend beyond national boundaries.

"We're actually going to develop a process where we can do Internet governance," Heath said. "We want to bring in people from governments around the world to create a body that has policy-setting capabilities." To that end, he said, ISOC already has courted three directorate generals from the European Community.

The IAHC likely will undergo a name change, too, perhaps settling on the International Infrastructure Policy Committee, Heath said.

Currently, the IAHC consists of 11 members, including representatives from the International Telecommunication Union, the International Trademark Association, the Internet Mail Consortium, the National Science Foundation, the World Intellectual Property Organization, international carriers and patent law firms. Heath serves as chairman of the group.

One goal, Heath said, is to enlist additional support from U.S. and foreign governments, and from vendor and service provider organizations such as the North American Network Operators Group and the Commercial Internet eXchange.

ISOC's Heath *wants to bring governments together.*

Frontier friends

ISOC's self-governance plan is getting the thumbs-up from such organizations as the Electronic Frontier Foundation. Lori Fena, the group's executive director, views the IAHC effort as a positive step but questions whether a supergoverning organization unattached to any country can gain eminent jurisdiction over the Internet.

"I tend to think most countries will not turn over communications law because the Internet is going to be part of an integrated overall communications network," she said.

The success of the IAHC, according to Fena, will lie in forging ties to government bodies and working with them in tandem.

Of greater concern though, is whether the IAHC will be able to court such organizations as the North American Network Operators Group and the Intercontinental Engineering Planning Group — both service providers.

ISOC is an association of Internet users, said John Curran, chief technology officer at BBN Communications, an Internet service provider in Cambridge, Mass.

The coordination of the Internet is not an ISOC initiative, and it is up to providers to work out operational issues, according to Curan. ■

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Backspin

An intranet is an intranet, but is it also an extranet?

A rose is a rose is a rose, hut a rose by any other name would be a Red Oblate Spheroid Entity. There's nothing like redefining something for marketing purposes.

Thus, it is with some irritation — make that much irritation — that I note the rise of the term "extranet."


Mark Gibbs

And who is the miscreant who coined this phrase? As far as I can determine, the culprit is Netscape's Marc Andreessen, who appeared on "The Charlie Rose Show" on Oct. 16, 1996 (according to the very useful whatis.com site at http://whatis.com).

Andreessen compounded his felony in a news.com (www.news.com) interview dated Sept. 6, 1996. Described by news.com as "the chubby, baby-faced, 24-year-old multimillionaire" (ouch!), Andreessen is quoted as saying, "Increasingly, a large part of our business will be what we call extranets, which is companies linking up to other companies."

Shame on you, Marc. When it comes down to it, extranet is just a piece of marketing-speak gobbledygook that some people with too much time on their keyboards and a lack of inspiration are using.

I am surprised how few organizations use firewalls to partition their internal networks.

The term is supposed to denote a Web server that handles confidential intranet content and communications that are to be made available on the public Internet to, for example, business partners and customers.

But hold hard! Is this not the same as a Web server with secure content? Of course, it is.

And before you start to argue that an extranet is different because it exists on a screened subnet behind a firewall, well (duh!), so should any Web server.

In fact, I am surprised how few organizations use firewalls to partition their internal networks. The idea is simple: Place firewalls on your network among groups or segments, whichever makes sense.

Then, starting with a firewall configuration that lets nothing through, begin enabling specific protocols and connections.

I say "enable" because many people start off allowing everything, and then whittle down the connections and protocols. This is a bad idea because you could inadvertently miss something.

So with a partitioned network, you have an environment where, for example, engineering can't directly access accounts in any way other than those you specify.

A major benefit of this strategy is that any other connection attempts will be logged by the firewall. You can then monitor and analyze the log, find the culprits, take them down to the IT group and torture them until their true intentions are established. After which, they can he eliminated from the grand plan as the vermin they are. Sorry, I got a little carried away there.

(Wow, a world-class digression. Where were we? Oh yes, extranets.)

I keep seeing the term extranet in magazines and online — a quick AltaVista search revealed 3,000 pages using the term. (With my recently installed 256K bit/sec Hughes Network Systems IP/Advantage satellite downlink, the search was awesomely quick. More on this topic later, as I am one happy guy with this setup... but I digress once again.)

Our industry's urge to peel a new term off any technical onion that sprouts in the computing field makes my eyes water. (Beating a metaphor to death like that surely deserves some kind of award.)

Let me sum it up this way: Concocting yet another term for a completely normal function of an intranet or any other system is just plain silly and lends an air of false sophistication that simply confuses end-user organizations. We don't need a special name for every variation and attribute of IT systems. We need clear, useful terms that technology consumers will understand.

An extranet by any other name is still an intranet.

Rant over. Ball's in your court, my friend. Volley back via E-mail at mgibbs@gibbs.com, or call me at (800) 622-1108, Ext. 504.

Oh, and thanks for all of the replies to last week's list of questions and the previous week's column on piracy. If I haven't replied to you yet, my apologies... I will.

'Net Buzz

The latest on the Internet/intranet industry.

By Chris Nerney

REVVING UP AN IPO It's still early in the year, but we're somewhat concerned over the lack of Internet IPO action in '97. Sure, it's good that investors have learned costly lessons about cyberspace speculation following last summer's market wake-up call. And yes, Internet start-ups are wise to build solid business models rather than cash in before Dollar One of net profit is even on the radar screen.

But we want some action. We yearn for the heady days when youthful temerity and investor greed prevailed over common sense. If things don't change soon, we may turn to auto racing to get our fix of the old crash-and-burn.

Perhaps the IPO filed last week by **New Era of Networks, Inc.** (NEON) will kick-start the reluctant Internet IPO market. Founded in 1993 and based in Englewood, Colo., NEON designs and develops application integration middleware for networks and the Internet.

The company will offer 3.3 million shares, according to lead underwriter UBS Securities. No estimated price was given in the SEC filing. In 1996, NEON had $7.1 million in revenue and a net loss of $5.7 million.

$10 MILLION HERE, $10 MILLION THERE Internet management software vendor **Sequel Technology Corp.** has snagged an additional $10 million in venture capital funds, bringing the total amount of invesunents in the 2-year-old Bellevue, Wash.-based company to $14 million. Olympic Venture Partners was lead investor in the latest round.

Sequel products are designed to allow companies to monitor and control online usage of intranets and the Internet.

BBN REPORTS REVENUE INCREASE, OPERATING LOSS **BBN Corp.** of Cambridge, Mass., reports second-quarter revenue of $83.9 million, up 54% from the comparable quarter in 1995. BBN officials say much of the increase is due to the growth of BBN Planet, the company's national ISP, which accounted for 47% of total revenue in the quarter.

The publicly traded company continues to lose money, however. Costs in the second quarter of '96 exceeded operating revenue by $10.5 million, compared to a $7.4 million operating loss in Q2 '95.

EXTRANETS WILL BE EXTRA SPECIAL By the year 2000, extranets will be critical to achieving corporate business objectives, despite the threat of inadequate security. That prediction does not come from a highly paid industry analyst, or even our not-so-highly-paid selves (though we will retroactively claim credit if it turns out to be true).

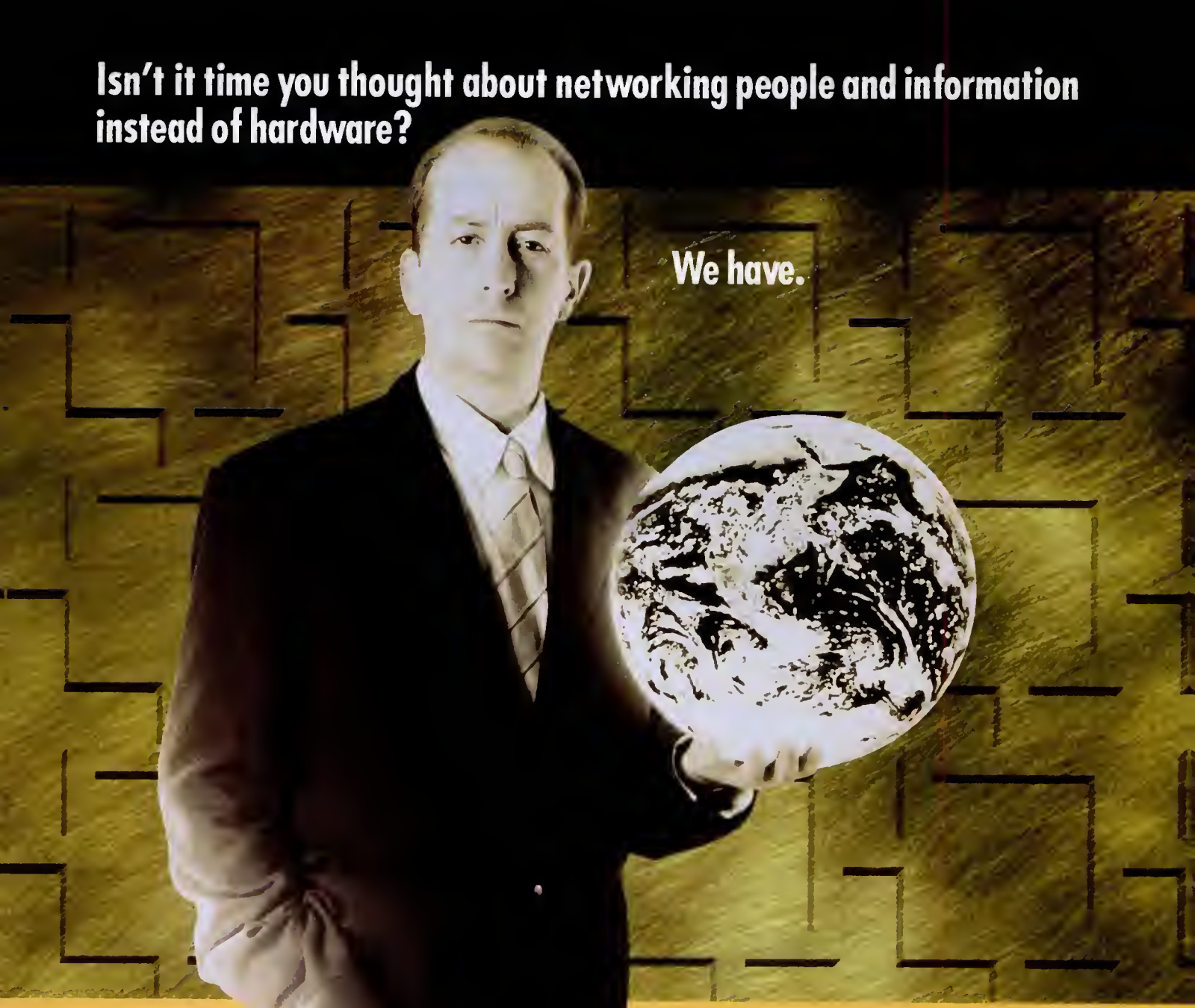
It's what members of **InfoTEST International** say in the second annual Future of the Internet Survey. InfoTEST is an alliance of high-tech companies, labs and research centers formed in 1993 to test how the Internet can be combined with other advanced information technologies to enhance U.S. business productivity.

InfoTEST members also predict the vast majority of existing ISPs will be bought out or go under by the year 2000, and that by the year 2010, Internet voice telephony will comprise at least 25% of phone calls worldwide.

A CAST OF STAR PRODUCTS Sometime next month, look for **Starlight Networks, Inc.** of Mountain View, Calif., to add to its StarCast video multicasting software support for corporate intranets. StarCast officials say new products will include a viewer for Windows 95 and NT that can receive and decode multicast video, as well as a recaster for Windows 95 that can receive encoded video over satellite and remulticast it over a LAN.

Instead of going to the Caribbean to shake the winter blues, try contributing your hottest news about Internet and intranet companies, products, movers and shakers to 'Net Buzz. No passport required. Contact Chris Nerney at (508) 820-7451 or cnerney@nww.com.

Isn't it time you thought about networking people and information instead of hardware?



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